Railway Age

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EDITORIAL

Railway Age

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Business is looking up in the supply field. The railways have greeted the arrival of the new year with an order placed by the Seaboard Air Line for some 1,500 to 2,000 cars. The Union Pacific, not to be outdone, has gone on record for 4,500 cars, the orders for which were placed the latter part of last week. The Illinois Central has ordered 2,000 gondola cars in addition to the refrigerator cars recently placed. Orders for additional freight cars are expected to be placed in the near future by the Burlington, which is talking about 7,000 cars, by the Great Northern, which is expected to contract for 3,500 cars, etc. Passenger car optimism is represented in the consideration being given new equipment by the Long Island, 50 cars; the Philadelphia & Reading, 50 additional to orders already placed; Burlington, 127; Union Pacific, 63, etc. The Staten Island Rapid Transit is talking about 50 cars. The Pennsylvania has issued inquiries for 20 dining cars and later may come in the market for a much larger quantity of passenger train cars. A long period has elapsed since the last occasion when there was so much prospective business in sight in either freight or passenger cars as there is at this moment. The situation, to put it mildly, looks good. It may be said, moreover, that there is a special significance in the placing of the Union Pacific order at this time outside of the size of the order. The Union Pacific has a reputation of being a good buyer of cars and locomotives. Its orders are usually placed at opportune times. In other words, we apparently have it on the Union Pacific's authority, as indicated by the placing of an order for 4,500 cars, that the present is an opportune time for equipment purchases.

An Order for 4,500 Cars

The English railways are showing real appreciation of the advantage to them of promoting passenger business in every possible way. Their method is an old one—the sale of tickets at reduced rates when and where such reductions are likely to attract passengers who otherwise would not travel. At the same time care is taken to assure that most of the ordinary traffic will be carried at the full legal rate. The extent to which these reduced rates are applied is remarkable—for example: "shopping" tickets good on suburban trains in non-rush hours; special excursion rates and special trains to athletic contests, fairs and industrial shows; special rates to seaside resorts; daily excursion rates available only on certain trains to and from all large industrial centers; reduced rates for round-trip tickets good over the week-end; special excursions to France and Belgium allowing passengers a few hours in either country. One company runs an excursion to a seaside resort, tickets for which include not only the rail trip but also food and hotel accommodations. By arranging for this service for a large number of excursionists the railway is enabled to secure for them satisfactory accommodations at reduced rates and at the same time assure a profit to itself. In sum, reduced rates are offered in practically every quarter where they would tend to bring additional passengers to the railways. Professor W. J. Cunningham in an article appearing recently in the New York Evening Post called attention to the relatively higher profit of passenger business now in comparison with pre-war days. This, coupled with the obvious fact that additional traffic would entail nothing like proportionate expense, suggests the advisability of some study of these activities in England by our railroad traffic men. Many well advertised excursions not only bring revenues to the railways, but they tend to create a favorable attitude in the minds of the public as well.

Excursion Rates Build Traffic

The railroads are today depending more and more on their communication systems to expedite train movements, to facilitate business between their various offices and to handle transactions with the public. During the past few years the demand for communication, especially by telephone, has increased rapidly, while during this same period the construction of new facilities has been, of necessity, held down to the minimum. These circumstances have, in many cases, resulted to the advantage of the railroads by forcing them to make message traffic studies and to develop priority systems of filing messages and the extensive superimposing of line circuits; all of which has tended to utilize the existing outside plant equipment more intensively. It is interesting to note that during this same period marked improvements in telegraph, telephone and wireless apparatus have been made, not only by the manufacturers and the commercial communication companies, but also by the army and navy. Several improvements have been made in telephone train dispatching selectors and loud-speaking apparatus, while the telephone repeater has been developed with such success as to remove the limit for long distance telephone conversation. For long-haul heavy message traffic the printer telegraph has proved economical. Using the trolley on an electrified road, the carrier-current system was recently demonstrated successfully as a means of communication with a moving train or between a locomotive and a caboose. Where physical conditions prevent the construction of a pole line, the wireless telephone will no doubt find a field. A summary of the situation brings out the fact that the railroads in many cases have urgent need for increased communication facilities and that as various newly-developed apparatus become available it would seem advisable that they should investigate the application of this equipment to determine its advantages for their service.

The Communication Situation

When Kipling penned the lines of his immortal "Recessional," it was a timely moment for the thought the verses bore. From that time on the three words, "Lest We Forget," though tempered in meaning by the varied circumstances calling them forth, have ever, when expressed, exercised a sobering influence upon thought; drawing the attention, as it were, to the importance of things likely to be or actually forgotten. This being so they might well be reiterated now. A new year has come. Whatever "tumult and shouting" attended the event is past, and in automatic conformity with

"Lest We Forget"

the established order of things men have taken up their work as though from a starting point. And there is much to be done—and undone. As usual, trains must be run—in sufficient numbers, at sufficient speeds, and according to a sufficiently flexible system to accommodate the country's varied pleasures and fluctuating business, yet economically enough to pay. The intricate system of tracks which binds us so effectively into a national entity must be altered here and there and maintained everywhere. Locomotives and cars must not suffer from inattention. Records must be kept, and among a thousand other things equipment must be bought and repaired. Thus, there is much to be done. But let us remember, in doing it, that the railway business after all is very much a human one. Let us remember that the passing of nearly a century of amazing development in equipment and system still finds intelligent co-operation of the worker and loyalty of the man among the indispensable of railway economic assets. And in keeping with this, let those men having charge over other men remember particularly that loyalty, while it may often be found under such conditions, does not thrive in an environment characterized by arrogance and conceit on the part of officers which cause them seldom or never to proffer the praise they are so ready to receive; that loyalty and enthusiastic service do not flourish where officers show want of that appreciation of commendable work which spurs men on to better work; and that criticisms wrongly made but establish more securely the unfortunate condition of a "house divided against itself." Let them remember rather, that in general, men of all classes are responsive to kindness and consideration, and that fair play on one side usually begets fair play on the other. How much better must the new year be, if only this much we do not forget?

"Propaganda" Regarding the Railroads

THE *Railway Age* recently published an editorial, entitled "The Railroads Must Defend Themselves Better." We asserted that an extensive propaganda of misrepresentation is being carried on, chiefly by leaders and spokesmen of the railway labor unions; that its purpose is to poison the minds of railway employees and the public regarding private management, and that it will have this effect unless more vigorously combated.

This editorial has been commented on by several newspapers. The Springfield (Mass.) Republican, which comes as near to being always intelligent and fair in its editorial comment as any newspaper published, has deprecated what we said. It states that there is little evidence of propaganda against the railways in New England. It raises the question "whether the propaganda already employed in behalf of the railroads is convincing," and concludes, "The railroads had better meet hostile propaganda not with propaganda but with full and authentic information." The Des Moines Register, a very able paper, which, however, shows bias against the railways in every comment it makes on them, says "if there were not something behind the propaganda of the men it names, these men would not create a ripple on the surface of public opinion." It implies that the trouble is with the railroads themselves, they having "been negligent in not facing the railroad situation honestly as it is."

That two such newspapers can thus express themselves indicates how little appreciation there is among even well informed men of what is going on in the railroad field. The leaders of the railway labor unions and their various spokesmen are energetically carrying on a nation-wide propaganda to mislead employees and the public regarding railway matters which has all the appearance of being the expression of a deliberate and well-conceived conspiracy to promote the Plumb plan by destroying confidence in private management. The Springfield Republican very properly calls for facts. We shall give some, and let it draw its own conclusions. We have a right, of course, to draw our own conclusions also.

Ever since the Plumb plan was launched by its author the heads of the railway labor unions and other spokesmen of these unions, including especially Glenn E. Plumb, W. Jett Lauck and Frank J. Warne, have been disseminating among railway employees throughout the country, and, so far as they have been able among the public, numerous gross perversions of the facts regarding railway matters. All of them have been worked up in the same way. The method invariably used is to take some of the facts regarding a particular phase of the railroad business, disregard all of the other facts bearing upon that phase of it, and then build upon the small foundation of facts used a gigantic superstructure of propaganda which is false because based upon only a small part of the pertinent facts.

The Firemen's Magazine, published by the Brotherhood of Locomotive Firemen and Enginemen, recently published statistics compiled by an anonymous "leading economist" in which it was sought to show by market quotations published in the New York Annalist of October 17, 1921, that the "maximum estimate of the market value of railroad securities" was $14,000,000,000. It drew from this estimate the conclusion that the valuation placed on the railroads by the Interstate Commerce Commission was $5,000,000,000 too large. Slason Thompson gave the answer at once. He made similar computations based on the market quotations of railway securities on June 30, 1916, and showed that the total market value of railroad securities at that time was $17,830,000,000. The investment made in railroad properties since then has been $2,800,000,000, which, added to the market value of securities in 1916, would give a valuation of over $20,600,000,000. If this method of valuation is fair, why was it not used in 1916? The enormous depreciation of the prices of railway securities since 1916 has been largely due to government operation, which increased the expenses out of all proportion to the earnings, and to the aftermath of government operation and of the war. The article in the Firemen's Magazine was propaganda deliberately intended to deceive railway employees as to the valuation the railways were entitled to have made.

A more astounding example of the same kind of misrepresentation is afforded by a recent performance of Glenn E. Plumb and William H. Johnston, president of the International Association of Machinists. Plumb and Johnston found that the tentative valuation of 24 railways made by the Interstate Commerce Commission averaged $32,700 per *mile of track*. They took this average valuation of these railways' *per mile of track*, applied it to the 265,000 *miles of line* of all the railways, and reached the remarkable conclusion that the valuation of all the railways should be only $8,610,000,000. This was $5,400,000,000 less than the "valuation" in the Firemen's Magazine, which shows how widely the labor "experts" disagree.

Messrs. Plumb and Johnston gave their "valuation" to the press and disseminated it among railway employees. It was entirely false in its implication for two reasons, as has been pointed out by President Markham of the Illinois Central in an open letter to Mr. Johnston. First, a *mile of line* may consist of several *tracks*, and the present *trackage* of all the railways of the country is estimated at about 405,000 miles. They had used *miles of track* in computing the average valuation of the 24 railways, and if they had used *miles of track* for all the railways they would have got on their own basis of computation a valuation $4,640,000,000 more than the one that they spread broadcast. Second, their estimate was based on only seven per cent of the country's total trackage, while the Interstate Commerce Commission's valuation in the rate case in 1920 was based on information it had gathered regarding all the railways. In other words, Plumb and Johnston had the effrontery to use information the commission

had reported regarding seven per cent of the trackage of the country to discredit a valuation made by the commission itself which was based upon information it had gathered regarding all the railways.

On November 27, 1921, Glenn E. Plumb made a characteristic public address in St. Louis to an audience composed largely of railway employees. Among other things he said the railways were physically bankrupt and unsafe for travel. The public, he added, should know that they were so run down as to jeopardize the lives of all who rode over them. The Interstate Commerce Commission had just made public its statistics of accidents for the year 1920; and they showed there has been a steady decline in railway accidents, and that the total number of persons killed on the railways in 1920 was the smallest since 1898, or for 22 years, although in these years the number of men employed by them increased over 400,000, the passenger business handled by them over 44 per cent, and the freight carried by them 64 per cent.

In testimony before the Railroad Labor Board and in recent public statements W. Jett Lauck, "consulting economist" of the Railway Employees' Department of the American Federation of Labor, has sought to convince railway employees and the public that by economies in operation which are practicable the railways could reduce their operating expenses $2,000,000,000 a year without reducing wages. The method used by him is that already described as being used by the leaders and spokesmen of the labor unions. He went through the files of the *Railway Age* and the Railway Mechanical Engineer for a long period and extracted hundreds of pages of material which they had published regarding means which it is desirable to adopt to promote efficiency and economy. In getting his material he necessarily passed in review a great many times more material published in the same papers describing improvements in equipment and methods, and increases in the efficiency of operation which actually had been made, and also showing why the inadequate earnings of the railroads had rendered it impracticable for most of them to do more along these lines than they had done.

All this voluminous material regarding what had been done he left out of his exhibits and based all his argument and conclusions on what had not been done. The record he thus made up was almost as false as if there had not been a word of truth in it. When, a short time ago, the propaganda being carried on by him and others was attacked by President C. H. Markham in a letter to employees of the Illinois Central Railroad, Mr. Lauck hypocritically replied by censuring Mr. Markham and his colleagues because, as he said, they did not "sincerely attempt to answer the facts which were submitted against them!" He knew better than any one else how he had misused and perverted the facts and the enormous exaggerations to which he had resorted. Furthermore, he knew that Daniel Willard, president of the Baltimore & Ohio, in testimony a few months ago before a Senate committee had presented detailed facts in reply to him which have never been answered.

The Transportation Act directs the Interstate Commerce Commission as nearly as it can to so fix railway rates until March 1, 1922, that the railways will be able to earn an average return of 5½ to 6 per cent. The labor leaders are chiefly responsible for the dissemination among railway employees and the public of the statement that this constitutes a "guarantee" to the railways; and they continue to disseminate it, although the authors of the Transportation Act and the Interstate Commerce Commission itself have expressly stated that it does not constitute a guarantee. If the railways had had a six per cent guarantee their net operating income in 1921 would have exceeded $1,100,000,000. It actually amounted to about $600,000,000, or about $500,000,000 less. This is all they got. The labor leaders know this, and yet they continue in their addresses and public statements to assert that the railways are "guaranteed" six per cent.

There are a few railway officers who are paid high salaries. Every man of sense knows that able men would not enter or stay in the railroad business if they could not earn incomes in it somewhere near as large as those paid in other businesses for work requiring equal ability and involving equal responsibility. The salaries of railway officers are, however, only an extremely small part of total railway earnings and expenses. In 1920 the salaries of all the general and division officers were only 2.5 per cent of the total pay roll, only 1.7 per cent of operating expenses, and only 1.5 per cent of total earnings. The salaries of the general officers, including all the so-called "fancy" salaries, were only three-fourths of one per cent of the total earnings, while the salaries of all officers paid over $20,000 a year were only one-fourth of one per cent of the total earnings. Nevertheless, labor leaders and other spokesmen of the unions incessantly represent to employees and the public that vast salaries paid to officers prevent employees from getting reasonable wages, and make it necessary for the public to pay unreasonable rates.

These are but a few examples of the misrepresentations constantly being made by spokesmen of the unions. The purpose of all this propaganda is to create unjustified sentiment among employees and the public against the railways. The creation of this sentiment increases the difficulty met by the railways in maintaining adequate freight and passenger rates. All the wages of the employees must be paid out of the earnings of the railways. Therefore, whatever tends to cause reductions of their rates and earnings necessarily tends to reduce the amount of wages they can pay. From this point of view the propaganda seems directly contrary to the interests of the employees. Why, then, is it carried on?

The labor leaders want the Plumb plan of government ownership and employees' management. If they cannot get that they want government ownership and government management because they believe that under government ownership they can get easier conditions of work and higher wages than under private ownership. They are not saying much about the Plumb plan now because they know it is unpopular. What they are trying to do is to make private management so unpopular that the public will revolt against it, and they hope that then the Plumb plan will have a chance.

What are the managements of the railways to do in the face of this widespread, selfish and deliberately misleading propaganda? The Des Moines Register says, in effect, that they should ignore it and run their business right and then all will be well. And yet the Des Moines Register itself recently made a statement in an editorial which showed that it had been misled by this propaganda. It stated Clifford Thorne had said that the market value of the railways never exceeded $13,000,000,000. What Mr. Thorne did was to present figures to the Interstate Commerce Commission in the rate advance hearing in July, 1920, in an attempt to show that the market value of railway securities at that time was only $12,300,000,000. He knew as well as anybody that the prices of securities in previous years were much higher than when he made his calculation. It should be noted that the commission had all his figures before it when it made its valuation. The Springfield Republican says the railways should present the facts and let the public draw its own conclusions. With that the *Railway Age* agrees. But suppose the labor leaders present their misrepresentations in a highly sensational way, as they did in the hearings on national agreements, and spokesmen of the railways reply merely by calmly presenting the truth. The Springfield Republican well knows whether the sensational charges of the labor leaders or the cold facts as presented by the railways are likely to receive the wider dissemination.

The problem presented by this labor union propaganda is

not merely that of the railways. It is that of the public. It is being carried on deliberately to destroy all possibility of the prosperity and credit of the railways being re-established under private management. If it is allowed to attain its object those who have invested in railway securities will lose heavily. But the public will be a very much larger loser, because the break-down of private management will force government ownership on the nation.

The *Railway Age* urged the railways to defend themselves better because it believes this is necessary not only in the interest of the railways, but of the public. We shall continue to urge them to do so. And, meantime, we urge the press of the country as a duty to itself and to the public to investigate thoroughly who is making the greater efforts, even in the excitement and under the temptations of partisan controversy, always to tell the truth about railway matters—the spokesmen of the labor unions, or the spokesmen of the railways. We know what the press will find if it will investigate.

If private ownership and management cannot stand the test of having the truth told about it, it ought to be destroyed; but private management should not be allowed to be overthrown and some Soviet scheme such as the Plumb plan erected in its place by such a campaign of wholesale misrepresentation and downright, deliberate falsification as is being carried on by the labor leaders.

Red Automobile Tail-Lights

AT FIRST GLANCE it would appear that the use of red for tail-lights on automobiles would be of slight interest to railroad officers and that this is the logical color to use as a marker. But it is of interest to railway managements and it is questionable if red is the logical color. Red is the universal color for danger, consequently it would appear logical to use it as a rear light. However, unlike the Missouri mule, there is nothing dangerous about the rear end of an automobile, provided the driver behind knows its location, and it would appear that some other light, as for example, a yellow light having the same photometric value as that used for a "caution" warning in railway signaling would be the logical color to use.

One riding on a boulevard at night is impressed with the confusing vista of red lights presented to an automobile driver. The result cannot do otherwise than to depreciate the value of this color as a danger indication. There is a certain psychological effect on a driver following a vista of red lights mile after mile, which tends to nullify its use as a danger signal. Illustrative of this, an accident occurred recently in which an automobile was struck by a train at a railroad crossing. The driver, who escaped, said that he had been following the red lights of cars ahead for some distance, and that on approaching the railroad crossing where the gates were down, he took for granted that the red lights on the gates were on the rear of a car ahead. He turned out to pass the supposed car, ran through the gates and was struck by a train. Had yellow or white been in use as a tail-light, instead of red, the driver would have realized immediately that he was approaching a dangerous location.

It is, of course, necessary that a driver be warned of his approach to a preceding machine, but it is even more important that he be warned of his approach to an opposing one and this latter is adequately arranged without the use of this color. From a safety-first standpoint it would appear that this is a question which should well receive the serious consideration, not only of the railroads, but of automotive clubs, automotive manufacturers, state public service commissions and the public. There may be laws in some states requiring a red tail-light on automobiles, and if so, it might be well to consider a change. As long as other colors can be used to as good advantage for markers, it would appear well to retain the red for use at extra dangerous locations, such as railroad crossings, boulevard crossings, and at places where material is piled in the streets. With the number of automobiles increasing rapidly, the value of red as a danger signal decreases accordingly.

Standardizing Grain Doors by Law

A BILL HAS RECENTLY been introduced in the United States Senate by Senator Lenroot of Wisconsin, authorizing the Interstate Commerce Commission to investigate existing types of grain doors and empowering it to order the type or types approved to be installed in freight cars on or before a fixed date, provided it is not earlier than December 31, 1926. The bill, known as S. 2691, it is understood, was introduced at the request of the proprietor of a patented grain door who, having received some commendation for his device but little encouragement to hope for its adoption by the railroads, has joined the ranks of the reformers who believe that anyone is more competent to manage the affairs of the railroads than railroad men themselves.

A number of patented grain doors have been developed that are undoubtedly superior in themselves to the usual type of loose grain door which is really only a part of the coopering of cars placed for grain loading. Most of these doors are designed to be permanent fixtures of the cars to which they are applied, and, indeed, unless they are permanent, would have not even the shadow of justification in seeking compulsory standardization. Although permanent doors might not be inconvenient for the shipper, their advantages, if any, would be largely of benefit to the railroad.

But let us see whether the railroads are so blind to their own interests as the reformers would have us believe. More than 50 per cent of all loading of grain and grain products originates on 11 western railroads. Add to these 11 roads 12 roads in the central, eastern and southern parts of the United States and more than three-quarters of all grain loadings are accounted for. On the 11 heaviest grain shipping roads in the west grain loading probably does not constitute an average of more than one-third of the demand for box cars and during the heaviest movement following the harvest in few cases does it exceed half of the box car demand.

It is evident, then, that even on the roads most vitally interested there might be some hesitation about going to the expense of providing their own cars with complete permanent grain door equipment subject to abuse and perhaps destruction while in other than grain service, even if all grain were loaded in home cars. But it is doubtful if more than 50 per cent of the grain loading is handled by cars owned by the loading lines, and if permanent doors were provided to care for the movement of grain it is evident that every box car in the country suitably designed for grain loading would have to be equipped. With the heavy grain movement originating on a comparatively few lines it is evident that a heavy burden of expense of equipping box cars for grain loading would fall on many roads whose interest in grain traffic is slight. The total annual grain loadings probably do not require an average of more than three loads per car per year and it is not probable that more than 50 per cent of all the box car equipment is ever in condition for grain loading at one time.

The maintenance of permanent grain doors on all of the equipment, therefore, involves an expenditure much of which is of doubtful utility, and the cost of maintaining such doors on cars only occasionally placed for grain loading, as compared with the cost of maintaining temporary grain doors, is problematical. Furthermore, the responsibility of providing temporary grain doors rests on the loading lines where it justly belongs, these roads having recourse to a pro-rata

distribution of the expense with intermediate and delivering lines by mutual agreement. Just what excuse Congress will find to justify itself in being used to serve the individual ends of any inventor or group of inventors, by the passage of this bill is difficult to see. Indeed, the wonder is that it has been introduced at all.

Ford's November Net Approaches Vanishing Point

HENRY FORD, famous among other things as the owner and press agent of the Detroit, Toledo & Ironton, it will perhaps be remembered was the gentleman who recently had some correspondence with the Interstate Commerce Commission relative to a possible simplification of the commission's accounting requirements. While the discussion was under way, he temporarily postponed the filing of the monthly reports of revenues and expenses and the operating statistics for his road. He finally softened his heart, however. He relented and filed his September and October figures. He filed them late. The September figures were particularly late.

According to the impression which had been given the press, and through the press to the public, Mr. Ford had been holding up his figures because of the discussion he had been carrying on with the commission relative to the simplified accounting requirements. The figures, when they were finally filed, gave a somewhat different impression, however. They seemed to indicate that Mr. Ford took first rank as a publicity man when he had something good to say but that he excelled as a censor when he had something poor to admit.

Apparently Mr. Ford or else the Interstate Commerce Commission has decided that the discussion as to simplified accounting requirements has now been brought to a close. The Detroit, Toledo & Ironton figures for November have been filed on time. They do not look sufficiently favorable to indicate that Mr. Ford can have filed them with any great degree of pleasure or satisfaction. Whereas, in April, the road's best month in 1921, the D. T. & I. had a net railway operating income of $276,452, and whereas in June the operating ratio was 52.75 per cent, in November, the net railway operating income was only $5,335 and the operating ratio was 82.3. The figures for November and the 11 months follow:

REVENUES AND EXPENSES, NOVEMBER, 1921, AND 11 MONTHS

	November 1921	11 months 1921
Operating revenues		
Freight	$658,290	$6,360,024
Passenger	10,292	149,185
Total (inc. misc.)	681,052	6,634,658
Operating expenses		
Maintenance-of-way and structures	165,438	1,307,161
Maintenance-of-equipment	98,340	982,041
Traffic	6,831	79,115
Transportation	270,877	2,272,154
General	19,343	213,485
Total	560,366	4,852,784
Operating ratio	82.3	73.1
Net from railway operations	120,686	1,781,874
Operating income	104,058	1,637,821
Net after rentals	5,335	892,931
Net after rentals, November, 1920	def. 212,136	
Net after rentals, 11 months, 1920	def. 1,309,401	

It will have to be granted that the Detroit, Toledo & Ironton has come far from making a failure of 1921. The fact that it has had in the first 11 months of 1921 a net operating income of $892,931 as contrasted with a deficit of $1,309,401 in the same period of 1920, indicates no small measure of improvement. Nor does an operating ratio of 73.1 for the 11 months look so bad. But, Mr. Ford's road when its publicity was at its best, was showing a net railway operating income of over $260,000 monthly—in April, May and June—and an operating ratio of from 52.75 to 56.75. In August the net railway operating income was but $70,643 and the operating ratio had risen to 71.77, which change was so marked that Henry decided to quit filing such evidence. His judgment was justified by the September results, which showed a net after rentals of but $46,749 and a ratio of 75.3 per cent, and still more by the October returns with a net after rentals of but $15,191 and an operating ratio of 78.9. Mr. Ford had in mind the deleterious effect such figures would have upon his publicity when they were examined by the eagle-eyed students of railway affairs. Unfortunately he forgot that the Interstate Commerce Commission was also interested, but interested less in Mr. Ford's publicity than in the legal requirements of giving the facts to the public.

The attention which, because of the previous favorable and wide-spread publicity, will be given the November net of only $5,335 and the November operating ratio of 82.3 is even more unfortunate. There are other factors of interest such as the gross earnings or the operating expenses. Most of us have been expecting that if Mr. Ford shipped fewer automobiles his road's earnings would suffer accordingly. They have actually suffered much worse than "accordingly." The sad details are given in the table.

The months in 1921 in which Mr. Ford's road had the greatest net railway operating income were April, May and June in each of which months the figure was over $260,000. The gross earnings in these months were respectively $697,490, $774,405 and $713,527. In July, he increased the gross earnings to $744,498; the net was reduced to $187,395. A further increase took place in gross in August to $763,840; the net was reduced to $70,643. September gross earnings were not quite so good, but they were still good—$759,757; the net after rentals had become $46,749. In October there was a real slump in gross—due to lessening flivver production; gross earnings were $652,438; net fell to but $15,191 and the operating ratio climbed to 78.9. The November gross was greater than that for October. It was $681,052; the net after rentals narrowly escaped being put in red figures. It was but $5,335 and the operating ratio continued on its climb to 82.3 per cent.

Now a very interesting fact develops as to the reason for the decreasing net and the progressively poorer operating ratio. There have been sizable increases in the past several months in maintenance expenses both for maintenance of way and for equipment. But the place where the real increase have come has been in the transportation expenses. Whereas in April, May and June the transportation expenses averaged in the neighborhood of $185,000, in November they were $270,877.

OPERATING RESULTS OF THE D. T. & I. TO NOV., 1921

Month	Revenues	Maint. of way	Maint. of equip.	Trans.	Total expenses	Op. ratio	Net from railway operation	Net after rentals	Net ton miles
Jan.	$248,425	$103,589	$80,932	$159,225	$370,006	$148.94	def. $121,580	def. $183,519	16,543
Feb.	190,171	72,249	74,728	126,740	294,093	155.17	def. 226,502	def. 127,851	12,075
Mar.	439,051	78,838	81,555	170,195	352,969	80.99	86,082	77,985	27,759
Apr.	697,490	97,088	87,626	183,381	395,815	56.75	301,675	276,452	37,760
May	744,405	127,791	84,502	189,236	422,327	56.73	322,077	263,293	49,467
June	713,527	82,221	80,793	188,517	376,382	52.75	337,144	261,259	46,001
July	744,498	118,289	74,706	222,206	444,794	59.74	299,704	187,395	46,826
Aug.	763,840	154,916	114,069	246,017	548,246	71.77	215,594	70,643	55,555
Sept.	759,757	161,425	142,897	237,336	572,278	75.3	187,479	46,749	*
Oct.	652,438	145,314	61,889	277,970	514,504	78.9	137,934	15,191	*
Nov.	681,052	165,438	98,340	270,877	560,366	82.3	120,686	5,335	*
11 months	6,634,658	1,307,161	982,041	2,272,154	4,852,784	73.1	1,781,874	892,931	*

*Figures not yet available.

There were those who smiled when Mr. Ford first began making his broad claims about what he was going to do with his D. T. & I. Where are these skeptics today? An easy query to answer, they are everywhere and what is worse, they are smiling. Mr. Ford may be expected, because of his tremendous capital and because of the business which he has to ship, to make a real railroad out of the D. T. & I. We shall be disappointed if he does not do so. So far, however, his ability as a publicity man has somewhat exceeded his ability as a railroad owner.

Mr. Ford, in fact, is a wonderful—we use the word advisedly—publicity man. He really ought, however, to have been a wee bit surer that his facts were going to stay with him, especially when his facts were railway earnings. Any railroad executive could have told him that.

Lesson of the Last Collision

THE GOVERNMENT REPORT on the Woodmont (Bryn Athyn) collision, noticed on another page, exposes bad practice in a half-dozen different features, and it ought to be widely read; for similar weaknesses exist, no doubt, on many roads. This may seem a harsh thing to say, but the Bureau of Safety during the past five years has, in numerous reports, set forth many and varied weaknesses in block signal practice and other vital features of safe train operation, and *nothing is known* as to how far and how intelligently the salutary advice given in these reports has been followed. The time seems opportune to renew the demand that the Bureau of Safety prepare to make its recommendations more constructive by finding out the true condition of things, generally, throughout the United States, as regards safe train operation, and making a comprehensive report thereon. Reporting the faults in specific cases—perhaps one per cent of the cases in which radical reform is called for—and publishing these reports month after month with nothing to tie them together but a perfunctory annual report to Congress, which congressmen do not comprehend, holds little promise of working any real improvement.

Government intervention in railroad operation is not a thing to be lightly recommended; it has, during the past 30 years, done much harm as well as much good; and leading public-spirited citizens are by no means agreed as to how far it is wise to go; but surely the point which we now stress is one of the least controversial in this field. The securing and publishing of information is one of the most legitimate functions of government (this is not to be taken as approval of dividing bodily injuries in the accident records into 183 classes for the statistical bureau and 100 other and equally unnecessary classes for the surgeons), and a strong and business-like policy in this direction would doubtless prove economical. A thousand superintendents, working through 2,000 trainmasters, might be expected to leave a percentage of loose threads in their discipline; and the government reports are reminding us constantly that this is fact, not mere theory. To what extent the weakness exists, only the government can find out.

All of the foregoing can be said without in the least impugning the records which show a remarkable decrease in deaths and injuries of passengers, employees and trespassers during the past ten years. Train accident records can be looked at from two viewpoints. We can concentrate attention on the totals for a year, or a series of years, which include the myriads of casualties, mild or severe, that seem to be almost inevitable; or we can make prominent the spectacular disasters. *Neither viewpoint can be neglected.* Great wrecks always agitate the public, and all concerned, whatever may have been our success in reducing annual totals.

Again, the present problem must not be confused with the plans or the work or the triumphs of the "Safety First" committees. That great work deals primarily with the problem of the workman who desires to keep his own skin whole and to avoid doing anything to injure his comrade. It has branched out somewhat from that simple scheme, but the fact remains that it cannot do much that is definite toward the prevention of collisions. Prevention of collisions was an important feature of safety-first long before the so-called safety-first movement was started; though it must be confessed that in collision prevention the actual practice has frequently belied the ideals most sadly.

The lessons of this latest collision are all too familiar to experienced railroad officers. We shall not repeat them in this place. The only thing any competent superintendent or manager needs to do is to read the facts and then search his own organization. Shall we say search his own heart? Some critics have a feeling that there is such a need. The report is a severe indictment of all concerned—officers, subofficers, trainmen and station men—and a study of it will not only suggest important inquiries that ought to be made on almost every road, but will explode some false notions; for example the notion, much too prevalent, that old conductors and enginemen, with good records, need no supervision.

New Books

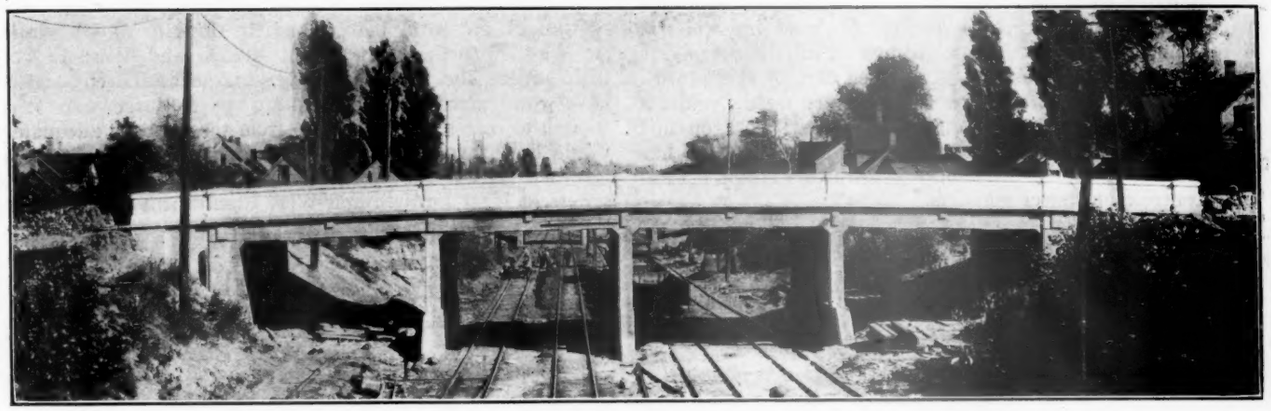
Bullinger's Postal & Shippers' Guide. 1240 *pages, 7½ in. by 10¼ in. Published by New England Railway Publishing Company, 67 Federal street, Boston, Mass. Issued annually, in January, at* $5 *a copy.*

This is the fifty-first number of this well-known handbook and, as will be noted from the foregoing paragraph, it is now published in Boston. E. W. Bullinger, the veteran publisher, who began this book in 1872 and who has published it in New York City these 48 years, announces that he is now 79 years old and that he has deemed it proper to retire. The New England concern, of which N. E. Weeks is president, has been a publisher of guides for 70 years and has been agent for Bullinger's Guide for 30 years.

This guide, which contains every post office and railroad station in the United States, with shipping directions for either freight or express; and which now covers Canada and New Foundland, as well as the United States, including Hawaii, scarcely needs an introduction to any railroad man, certainly not to any up-to-date freight agent; and to those who are not acquainted with the book we may say that it is as nearly perfect as a book of that kind can be made. In fact, it is perhaps open to criticism as giving information in too much detail. For example, the list of railroads gives the terminal points of every little branch; the Louisville & Nashville, for example, being entered under 102 items. The Boston & Albany, operating less than 400 miles, is divided into 16 items.

The book now weighs over four pounds. We cannot say that it has increased in merit at the same rate that it has increased in size, for it was too good in the beginning to admit of any such rate of progress. The editor prints prominently a request for advice of errors found by users of the book, and intimates that the people in the tombs along the banks of the Nile are the only people in the world who are able to beat him, year after year, in making a record free from mistakes. He is doing everything within his power to equal those Egyptians' records.

FREIGHT RATES on road-building material have been reduced in Texas by order of the railroad commission 15 per cent, but the decrease applies only on the Southern Pacific, Gulf, Colorado & Santa Fe, Missouri, Kansas & Texas, Panhandle & Santa Fe; Houston & Brazos Valley and the Texas Midland; and only when the county or state pays the freight charges. The reduction is not applicable for private contractors or for municipal work.



A Typical Street Viaduct Over the Cut

Nickel Plate Is Completing Grade Separation Work

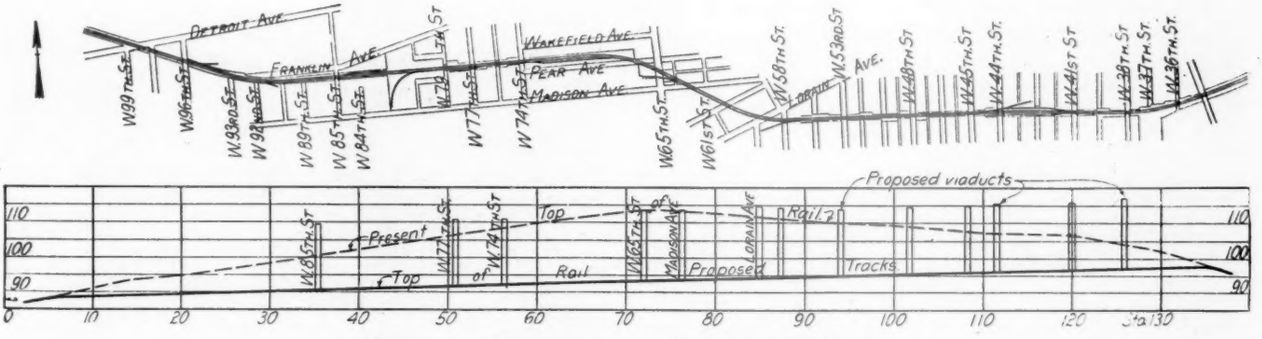
Large Cut Requires Special Drainage—Concrete Viaducts Being Built by Company Forces

ONE OF THE FEW large grade separation projects now under way in this country is being carried through the last stages by the New York, Chicago & St. Louis at Cleveland, Ohio. This is a depression project, involving 800,000 cu. yd. of excavation on a relatively flat gradient, and presented a formidable problem in the disposal of the drainage; in fact, provision for drainage entailed an expenditure even greater than that required for the work of excavation and also exerted a pronounced influence on the manner in which the other features of the work were carried out.

Another feature of no little interest in connection with this project is the fact that the street viaducts are designed to provide space underneath them for eight tracks, although the excavation now completed gives room for only four tracks. Later, if it is deemed desirable, the four-track layout may be expanded for eight-track construction.

The inception of this project in 1915 excited much interest because of the daring plan proposed by the late A. J. Himes, who was originally in charge of this work, for the disposal of the excavation by the hydraulic process, using the material from the cut to fill a large gully near the east limit of the track depression. Authority was actually granted for the prosecution of the work according to this plan and considerable equipment was purchased and delivered, but a change in ownership of the Nickel Plate resulting in the development of plans for yard construction and extension in the eastern portion of the city of Cleveland, created a demand for considerable filling material. As a consequence, it was deemed advisable to excavate the track depression cut in the dry in order that the material thus obtained might be used in embankments on the other projects.

This track depression work is known as the "west side grade crossing elimination" and extends from Fulton road, where the Nickel Plate tracks leave the valley of the Cuyahoga river and enter a closely built-up resident section in which the railroad is crossed by two important street car lines. The present work extends to the vicinity of Detroit avenue, a busy thoroughfare on which grade separation was effected in an independent project completed in 1905 by partial depression of the tracks and partial elevation of the street. This partial depression at Detroit avenue and the descent of the tracks into the Cuyahoga valley at the east end definitely pointed to depression as the only practical solution of the new project.



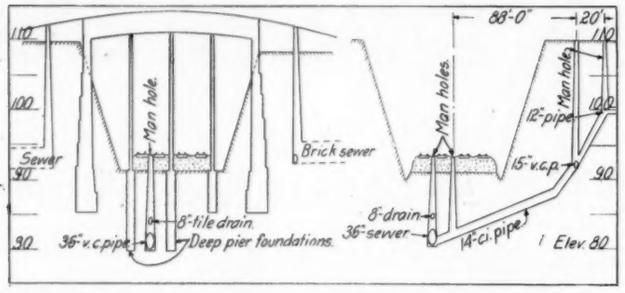
Layout and Profile of the Grade Separation District

Actual work on the excavation, which represented about 7½ per cent of the total expenditure for this project, was started in January, 1917, and completed in December of the same year, the Walsh Construction Company of Davenport, Iowa, being the contractor. The earlier stages of this project were described in the *Railway Age Gazette* of October 12, 1917, page 653, and were of particular interest because the dragline method was largely used for excavation.

No masonry work was carried on in connection with this part of the project except as required for retaining walls at a few points to protect the buildings of adjacent property holders. The street crossings were taken care of as the work progressed by the construction of temporary trestle viaducts across the depression prism and the principal work on this project subsequent to the completion of the excavation has been that of replacing the temporary structures with permanent concrete and steel viaducts.

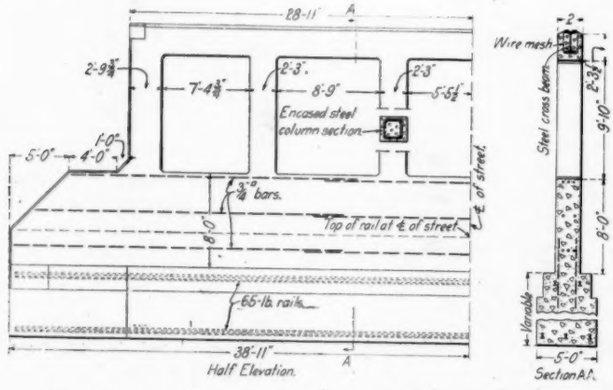
Serious Drainage Problem

Any cut 2½ miles long, 15 to 20 ft. deep and with an average grade of only 0.075 per cent, in a country of average



Two Sections (Distorted) of the Track Depression Cut Illustrating the Drainage System

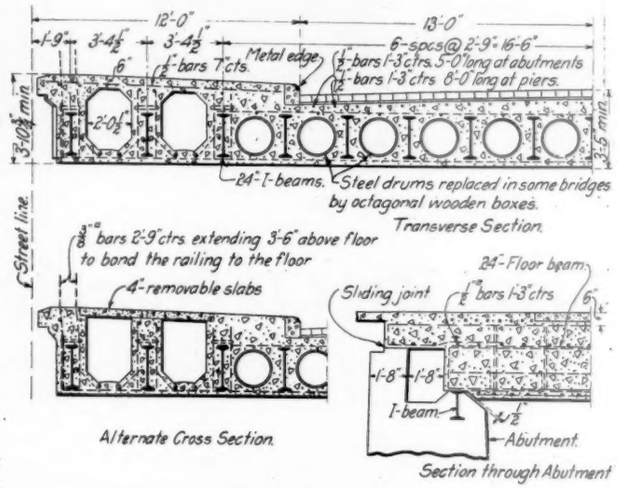
rainfall and in a sandy soil will impose a serious problem on those who undertake its excavation. If in addition it becomes necessary to intercept sewers at each street, carrying both sanitary and surface flows, the problem assumes much greater magnitude. These were the conditions imposed on the engineers of the Nickel Plate and called for the construction of a large sewer for nearly the whole length of the cut, supplemented by a system of sub-soil drains. The main sewer varies from 15 in. to 36 in. in diameter and was constructed of vitrified sewer pipe. It was located on the center line between two of the tracks, but in certain places where it was necessary to pass directly under one of the tracks, cast iron pipe was used. Manholes were constructed at intervals of about 300 ft. for the junction of sub-soil drains and



Typical Details of a Pier for the Street Viaducts

the interception of the city sewers. Fortunately, it was possible to secure an outfall for this sewer at West Fifty-fifth street, or not far from the midlength of the cut, and thus drain the water both ways toward the center. But even with this arrangement it was necessary to place the sewer at a maximum depth of 18 ft. below grade in order that a sufficient gradient might be obtained.

The outfall consisted of a brick sewer four feet wide by five feet high, built by tunneling and open cut along West Fifty-fifth street to a main sewer in Walworth avenue, this portion of the work being done by the city of Cleveland. At West Fortieth, West Seventy-fourth and West Eighty-fifth streets, the sewers were very large and deep, and to have constructed the intercepting sewer large and deep enough to care for the drainage from these streets adequately would have involved an excessive expenditure. It was therefore deemed advisable and economical to construct concrete sewers in West Fortieth and West Eighty-fifth streets to care

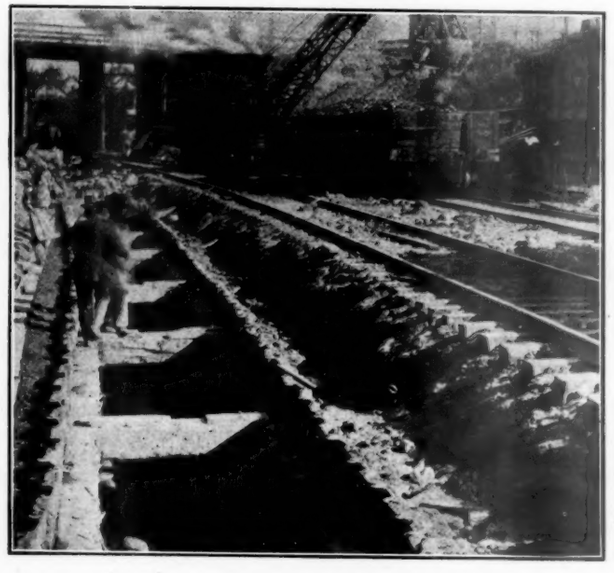


The Weight of the Bridge Floors Was Reduced by Introducing Steel or Wooden Drums Between the I-Beams

for the drainage from these two streets. At West Seventy-fourth street the drainage was carried under the roadbed in the cut by means of an inverted syphon.

Street Viaducts All One Type

A standard plan of viaduct construction was developed and applied to all of the streets where it was possible to do



Deep Excavation for Pier Footings Required Sheet Pilings

so. Of the 13 bridges to be placed, 9 will follow the one type of construction, with slight variations to conform to the angles of the crossings. In addition to the 13 concrete overhead bridges, two of which carry street railway tracks, there

will be foot bridges, not to exceed five in number, erected at streets designated by the city of Cleveland.

The design of the concrete bridge structures is simple, being comprised of a four-span structural steel bridge encased in concrete, each span opening being wide enough for two tracks. The substructure consists of mass abutments with piers of concrete encasing steel columns. The superstructure comprises longitudinal I-beams encased in concrete to form the floor. In the sidewalk structure the I-beams are encased separately with reinforced concrete slabs at both the top and bottom to provide public utility galleries. A concrete banister on each side of suitable design completes the viaduct. Under the original plan, at five of the bridges, viz., West Forty-first, West Fifty-third, West Sixty-fifth, West Seventy-fourth and West Eighty-fifth streets, steel drums were introduced into the floor between the beams. These drums reduced the volume of concrete and thus not only aided in relieving the weight of the floor, but they also effected a decided decrease in cost. Later developments, however, showed that drums constructed of wood, which, needless to say, would be less expensive than the steel drums, could be used with just as good an effect as the steel drums. Consequently, this type of drum is being used on the additional eight bridges.

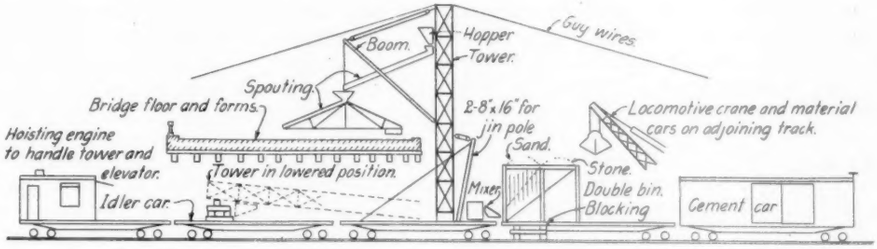
Most of the structures cross the tracks at an angle of nearly 90 deg., thus affording opportunity for standardization of design, but four of the streets cross the cut at considerable skews and two of them, West Fifty-eighth street and Lorain avenue, intersect within the limits of the excavation prism. As a consequence, the structures for these particular crossings involve some interesting departures from the standard design.

For the most part the tracks were depressed a sufficient amount to avoid any appreciable changes in the street grades, but at a number of the crossings it was necessary to provide elevated approaches to the viaducts. This was done by building embankments supported by concrete retaining walls along the street lines.

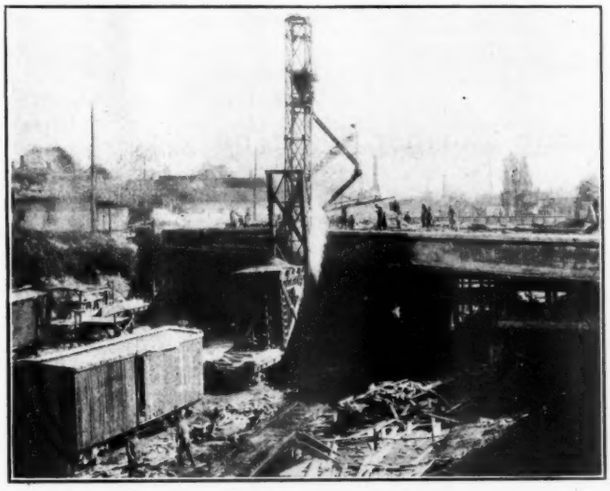
Concrete Work Handled by Company Forces

The construction of the permanent viaducts was started in 1919 and has been carried on almost continually since that time. All of the work has been done with company forces except the erection of the structural steel for the viaducts which was done under contract by the King Bridge Company of Cleveland, Ohio. The most troublesome feature of the work was the construction of the footings for the viaduct piers on either side of the sewer since it was necessary to carry these down below the bottom of the sewer, or about 17 ft. below subgrade. The footings for the other portions of the substructure were placed on natural foundations about 6 ft. below subgrade, but danger of undermining in close proximity to the sewer made the deeper foundations for the piers necessary.

Pile foundations were impractical owing to the fact that the running sand encountered precluded the driving of piles.



Layout of the Concrete Plant in Operation



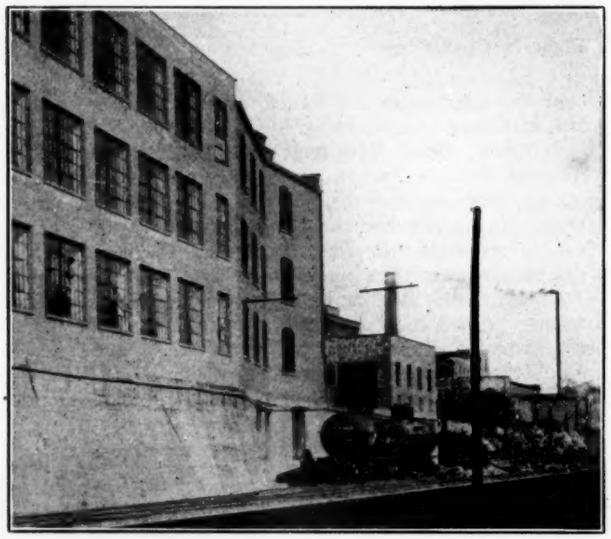
The Mixer Plant at Work, Vacant Track on the Right Reserved for Material Cars and Locomotive Crane

Industrial Building Supported by Timber Cribbing with Service Track Carried on the Old Grade by a Trestle

The deep excavation in sandy soil containing large quantities of water necessitated the use of steel sheet piling heavily timbered. The conditions which precluded the use of pile foundation also militated against the ready driving of the sheet piles. In fact, it was necessary to jet some of the sheet piling into place. This work was facilitated to a certain extent, however, by the development of a ready means for pull-

ing the piles which effected a considerable saving and made it possible to use some of the piling as many as 20 times. This pile-pulling rig consisted of a gin pole or strut composed of two 18-in. by 9-in. stringers, bolted together and fastened to the end of the boom of a locomotive crane, with two independent drums, so that the reaction of pulling was transferred directly to the top of an adjacent sheet pile instead of to the crane boom.

As the masonry work on this project entailed the mixing and placing of 36,000 cu. yd. of concrete, considerable thought was given to the development of a concrete plant that would be thoroughly adapted to the conditions imposed. As the track depression prism is wide enough so that it was possible to provide two tracks for the operating department and still leave space for two tracks for the construction equipment, the concreting plant was designed to take full advantage of two tracks and the fact that it would not often be disturbed by the operation of trains. As a consequence, the concreting plant is, in effect, a fixed plant except that it is mounted on cars so that it may be moved readily from one



Industrial Building Underpinned by a Retaining Wall. Service Track Provided on the Depressed Level

viaduct to the next one. The arrangement of the plant will be readily understood from the drawing and consists essentially of an Insley tower and spouting outfit mounted on a flat car adjacent to a concrete mixer with a gallows frame arrangement to permit of lowering the tower on an adjacent idler car whenever a shift is being made. The fine and coarse aggregates are supplied to a double material hopper by a locomotive crane from material cars standing on the adjacent track. Cement is wheeled from the cement car to the mixer over a temporary runway erected alongside. The car containing the hoisting engine for elevating the concrete is set far enough away from the tower car so that the smokestack will clear the edge of the viaduct.

This concreting outfit will deliver concrete to any part of the viaducts crossing the tracks at right angles from a single position of the plant. In the case of the longer structures required at some of the skew crossings, it is necessary to supplement the spouting delivery with the use of concrete buggies to reach the more remote portions of the structures. This concrete plant can be dismantled readily, moved to another structure and again set up ready for use in a day's time.

One of the interesting features of this work is the arrangement made to take care of service tracks. The grade separation area includes two team yards which have been constructed on a level generally coincident with the streets with access to the track depression level by means of decline tracks. There are only a limited number of industrial developments within the grade separation territory, but several different methods were devised in supplying trackage to these industries under the new grade arrangement. Two photographs illustrate two methods in which this has been accomplished. In one case the building walls have been underpinned and an industry track provided on the new grade line. In the other case, an incline trestle has been provided so that the industry is afforded trackage on essentially the old level.

This work has been handled under the direction of A. C. Harvey, until recently engineer of grade crossing elimination, now assistant chief engineer, and under the general direction of E. E. Hart, chief engineer, Cleveland, Ohio. The grade crossing elimination work has been handled by a complete organization for both field and office work, all roadway and structural drawings being handled under the direction of a chief draftsman and all construction work under a field engineer who has direct supervision over the various construction foremen.

The estimated cost of the project is $4,400,000. The city of Cleveland pays 35 per cent of all that portion of the total expense of this work, including property damage, that is required in providing the railway company the same facilities on the new level as it had before the work was undertaken. All expense entailed in providing additional facilities is borne entirely by the railroad company. The total outlay for this project is subdivided approximately as given in the table below:

Land and property damage	$1,000,000
Excavation	323,000
Drainage, sewers and water pipes	480,000
Viaducts and streets	1,770,000
Tracks	227,000
Miscellaneous	600,000

Some Further Data on Federal Valuation

SINCE THE PUBLICATION of the résumé of the work of federal valuation, which appeared in the issue of January 7, page 36, the following data have been received, showing the amount of this work now completed.

	Mileage	Percentage
ENGINEERING SECTION		
Road Mileage assigned	247,882	100.0
Field work entirely completed	247,882	100.0
Field notes collected	224,300	90.5
Prices applied	168,960	68.2
Reports assembled	149,700	60.4
Reports completed on 635 corporations covering	143,879	58.1
LAND SECTION		
Road mileage assigned	247,882	100.0
Mileage appraised	245,752	99.2
Mileage computed	222,948	90.0
Mileage compiled	133,294	53.8
Reports completed on 591 corporations covering	131,857	53.2
ACCOUNTING SECTION		
Road mileage assigned	247,882	100.0
Field work completed except verification of returns to valuation orders	245,394	99.0
Verification of returns to valuation orders	242,844	98.0
Reports rough drafted	153,775	62.1
Reports completed on 471 corporations covering	84,091	33.9

The commission itself has published final value figures on 230 corporations, representing approximately 25,700 miles of road.

Due to the centralization of the work the personnel of the bureau has been greatly reduced, particularly in the overhead organizations. The higher officials are now as follows:

Acting Director, C. F. Staples.

Executive Assistant and Supervisor of Land Appraisals, T. P. Artaud.

Solicitor, Dr. Charles W. Needham.

Supervising Engineer, Howard M. Jones.

Supervisor of Accounts, J. M. Willey.

Government Reports Promptly on Reading Collision

Conductor Believed Train Order Gave Authority to Disregard the Manual Block Signal

THE INTERSTATE COMMERCE COMMISSION has issued a report, dated December 23, and signed by W. P. Borland, chief of the Bureau of Safety, on the collision between eastbound and westbound passenger trains on the Philadelphia & Reading near Woodmont (near Bryn Athyn), Pa., on December 5 last, when 27 persons—20 passengers, two employees on duty and five off duty—were killed, and 65 passengers and five employees were injured.

The main facts are substantially as given in the *Railway Age* of December 10, page 1163. The eastbound train (No. 151) was superior by direction. The first manual block section is from Bryn Athyn to Churchville, 5.7 miles, but there is an intermediate non-block station, Southampton, where trains frequently meet. The switch at Bryn Athyn is 515 ft. east of the semaphore signal; and 175 ft. farther east is automatic block signal No. 716, governing westbound trains. Automatic signal No. 713, for eastbound trains, is at Huntingdon Valley, nearly a mile west of Bryn Athyn, and is controlled by a track circuit extending to a point 1,500 ft. east of signal 716. Westbound train 154 stopped at signal 716 because there was not time to go to Huntingdon Valley to clear train 151, and also because signal 716 was in the stop position. The flagman was sent ahead and, after a few minutes, the train moved forward to the station, where it received an order to "disregard signal 716 and run carefully." The train was then set back to wait for train 151, the side track not being long enough for 154.

Eastbound train 151 was in charge of Conductor Evans and Engineman Yeakel. At Huntingdon Valley this train found automatic signal 713 in the stop position and sent a flagman ahead; and after waiting a few minutes the train followed him to Bryn Athyn, arriving there, according to the record, at 7:42 a. m. Conductor Evans sent word to the engineman to move the train forward and back in on the siding (train 154 being at rest on the main track beyond the switch), but the engineman insisted that to do so he must first have a dispatcher's order. The conductor soon after received the order to meet No. 156 at Bryn Athyn and gave a copy of it to the engineman; and the train was then started. A stop was made at Paper Mills, 0.7 mile east of Bryn Athyn, and the train then proceeded about half a mile farther before colliding with train 156. The employees on duty who were killed were the fireman of each train.

Conductor Evans, at the hearing, said that he received order No. 11 (to meet No. 156), read it in a low tone of voice and "was under the impression that it was an order to meet train 154." He walked to the engine and delivered a copy of the order to the engineman, neither of them reading it to the other, or making any comment whatever. He claimed that a train order was sufficient authority for a train to pass a block signal or a train order signal in the stop position, without a clearance card. He did not show his copy of the train order to the trainmen. He put the order under the baggage master's box in the baggage car, as was his custom, so that the baggage master might see it.

Engineman Yeakel said that he glanced at the order and "got the impression" that it was to meet train 154.

Operator Clayton, at Bryn Athyn, made conflicting and vacillating statements. The conductor read the train order to himself, but Clayton said that he overheard the reading and that it was read correctly. He said that he gave Churchville permission to send forward train 156, considering that the block for westbound trains ended at automatic signal 716 which was east of train 151, standing on the side track. If he had waited until train 154 had passed his station before giving a clear block to Churchville, he probably would have discovered that train 151 had departed contrary to orders.

The entries on the block record at Bryn Athyn were found to have been altered, and Clayton explained that, being busy selling tickets, he made the entries an hour after the train had left; and at that time he was very much excited and disturbed.

Operator Tomlinson, at Churchville, also made conflicting statements and the record produced by him, purporting to be the original block record at the station, proved to have been made by him probably on the following day. Operator Tomlinson said that he seldom received standard time, his office being closed at the hour when time is transmitted.

Train dispatcher Rich, on receiving the report from train 154 that signal 716 was in the stop position, assumed that the circuit was out of order; and he directed the train to disregard that signal so as to obviate the necessity of flagging to Huntingdon Valley.

The report, in conclusion, lays the main responsibility on Conductor Evans and Engineman Yeakel for disobeying the train order and for leaving Bryn Athyn with the block signal in the stop position without securing a clearance card; but the failure of the operators contributed to the disaster. The inspector believes that the conductor and engineman at fault anticipated the contents of the order, and thus acted upon an impression. Engineman Yeakel, having said that he would not move the train forward until he received an order, evidently assumed, when he did receive an order, that it was the one which he had asked for. Going away without a clearance card, when the block signal was at stop, was not an oversight, says the report; it was due to a wrong understanding of the rules.

The inspector feels sure that 156 left Churchville under a clear block signal while train 154 still stood on the main track at signal 716. Statements of the operators are so conflicting and their records so faulty that their statements are held to be of little value; and it cannot be determined whether or not Tomlinson, operator at Churchville, allowed 156 to go before he had authority from Bryn Athyn.

The investigation disclosed a general laxity in the observance of block signal rules. The block system is regularly suspended at Churchville from 2:35 p. m. to 3:35 p. m. There was no uniform understanding as to whether the siding at Bryn Athyn was within the limits of the station or whether it was in the block section between Bryn Athyn and Churchville; or whether it was necessary for 151 to have a clearance or caution card before being moved forward to be set back into the siding. Employees are not regularly reexamined on the rules and some of them have not been examined since 1914. The train dispatcher had never been examined. Trains appear to be authorized frequently to disregard automatic block signal indications on trivial occasions, merely to prevent delay.

The report recommends that measures be taken promptly to insure that employees understand and obey the rules and that "the carrier be required to install on this line a complete automatic train control system."

The report discusses the fire, aggravated possibly by the illuminating gas in the cars, and observes that with steel cars the casualties would no doubt have been fewer; but the Reading has not bought any wooden cars for a number of years. At the present time the road has 205 steel passenger

cars, 90 with steel underframes and 289 wooden coaches in service.

Conductor Evans had been a passenger conductor since 1912 and was examined on the rules in 1919; Engineman Yeakel had run passenger trains since 1904. There is no record of his last examination on the rules. Both these men had been on duty more than nine hours (at 7:45 a. m.). Operator Clayton had been station agent since 1902 and Tomlinson since 1907.

Labor Board Considers New Rules for Clerks

AFTER A SHORT HOLIDAY vacation the Railroad Labor Board has again swung into action, taking up consideration of new rules to govern the working conditions of railway clerks and to supersede provisions of the clerks' national agreement over which the carriers and their employees cannot agree. In addition the board has been hearing several disputes between individual carriers and various classes of their employees, particularly a group of disputes over wage scales between a number of short lines and their employees.

The board, in taking up consideration of the disputes between various carriers and their clerical forces resulting from the attempt to negotiate new rules to govern the working conditions of these employees, has summarized the principal points on which an appreciable number of the carriers have been unable to agree with representatives of the employees. This summary indicates that the disagreements, in general, have been confined to 25 rules of the old national agreement. On all other points the carriers and their employees have either reached agreements or the submissions to the board indicate that the points can easily be settled between the carriers and the employees. Seven of the rules, according to the board's summary of the submissions, involve vital points on which agreements could not be reached by a large number of carriers. The board's summary of the more important rules follows:

Rule 48—Disagreed to by 29 carriers, agreed to by 25. The present rule provides for an eight-hour day. The carriers seek to have exception from the eight-hour day made for employees in light employment and also at stations where but few employees are employed and the train service is infrequent. Other carriers seek a nine-hour and some a ten-hour day.

Rule 49—Disagreed to by 35 carriers, agreed to by 13. This rule provides for paying a monthly salary to cover all services rendered to employees whose work is of an intermittent character, and not requiring continuous application. This would eliminate the payment of overtime to employees covered by the rule. It is sought to apply to such classes as baggagemen, train crew callers, gatemen, announcers, etc.

Rule 57—Provides for time and one-half after eight hours. Agreed to by only 8 carriers and disagreed to by 44. The eight which have agreed in this instance have not agreed to pay time and one-half, but some of them have agreed with the employees to pay pro-rata for the ninth and tenth hours. The carriers are asking in some cases for no overtime until after ninth hour, and then pro-rata until the tenth hour has expired and time and one-half thereafter. Other carriers seek to have pro-rata time paid for the ninth and tenth hours and time and one-half thereafter.

Rule 58—Disagreed to by 25 and agreed to by 25 carriers. Provides for three hours pay for two hours work performed on call; also time and one-half for time prior to and after the regular work period. Carriers seek pro-rata pay for calls and time up to ten hours. Other carriers seek a rule providing for time and one-half for calls, but object to time and one-half for service continuous with the work period.

Rule 64—Disagreed to by 36 carriers, agreed to by 18. This rule provides for paying time and one-half for service performed on Sundays and holidays where the entire number of hours constituting the regular week-day assignment are worked. The carriers seek to have all time and one-half payments for Sundays and holidays eliminated, except work after ten hours.

Rule 65—Disagreed to by 24 carriers, agreed to by 16. This rule provides for the payment of three hours pay for two hours work for calls and time and one-half thereafter where the hours constituting the regular weekly assignment have not been worked. The carriers seek the elimination of punitive payments in this rule.

Rule 66—Disagreed to by 32 carriers, agreed to by 17. This rule provides for all employees being paid on a daily basis. Some carriers seek a monthly basis of payment, others weekly and still others object to the method of computing the daily rate as outlined in this rule. Decision 426 of the board removes considerable objection to this rule.

Other points on which there have been disagreements on an appreciable number of carriers include seniority and promotion, seniority districts, the payment of laborers and others around freight houses on an hourly basis, arbitrary payments for reporting, etc., and meal periods.

Short Lines Deferred Wage Reductions

Hearings were held on January 9, in a number of disputes between several short line railroads and various classes of their employees regarding wages. The employees in practically all of these cases charged that the carriers in question had reduced wages without the authority of the Board or in compliance with the provisions of the Transportation Act. Representatives of the carriers involved either denied that they had violated the Transportation Act in putting into effect reduced wages comparable to the reductions made in the wages of the larger carriers last July, or contended that the Labor Board had no jurisdiction.

The carriers involved in these hearings were the Tremont & Gulf, the Litchfield & Madison, the Peoria Railway Terminal Company, the Detroit, Bay City & Western, the Susquehanna & New York, the Toledo, St. Louis & Western, the St. Joseph Union Depot Company, the Mobile & Ohio, the Mississippi River & Bonne Terre, and the Interstate Railroad. The organizations involved include the train service brotherhoods, the dispatchers' association and the maintenance of way, clerks and telegraphers' organization.

In many cases the inability of the carriers to pay the standard rates of pay fixed for larger and more prosperous carriers was cited. In one dispute, that between the Mississippi River & Bonne Terre and the Order of Railroad Telegraphers, in which the carrier was charged with reducing wages without complying with the formalities of the Transportation Act, it developed that while this carrier was not included in the proceedings which ended in the wage increase of July, 1920, it had later granted these increases and that when the decreases of July, 1921, were announced it had made reductions, although not to the same extent as was ordered by the Labor Board at that time. The wage scales for employees of this carrier are still above the level ordered in the Board's decision No. 147 last July.

Shopmen Consider New Rules

A committee of 100 representatives of shop employees met in Chicago on January 9, to consider and pass upon the new rules governing the working conditions of shop employees, announced several weeks ago by the Labor Board. This committee is to take up each of the 186 rules to consider its relation to other rules and its effect on the individual worker. On the decision of this committee will depend whether the shop crafts will again threaten to strike in protest over both the rules and wage reduction of last July. It will be recalled in this connection that a strike vote, taken immediately after the wage reduction last July, authorized the general council, composed of the international presidents of the shop crafts organizations and B. M. Jewell, president of the Railway Employees Department of the American Federation of Labor, to call a strike. The call was deferred, however, until the rules controversy, which had been before the Labor Board for many months, was acted upon. Union leaders declared that a more effective fight could be made on the rules and wage questions together than on the wage cut alone.

The Webb Automatic Train Stop Tested on the Erie

Mechanical Contact Train-Stop Which Checks Its Own Integrity —Interesting Tests on the Erie

As heretofore noted in the *Railway Age* (July 2, 1921), experiments have been going on for some time on the Erie Railroad with an automatic train stop; and these have now been completed to the extent that arrangements have been made by the manufacturer of the apparatus, the International Signal Company, of New York City, for testing the stops extensively between Englewood,

Automatic Stop Apparatus on Locomotive 955

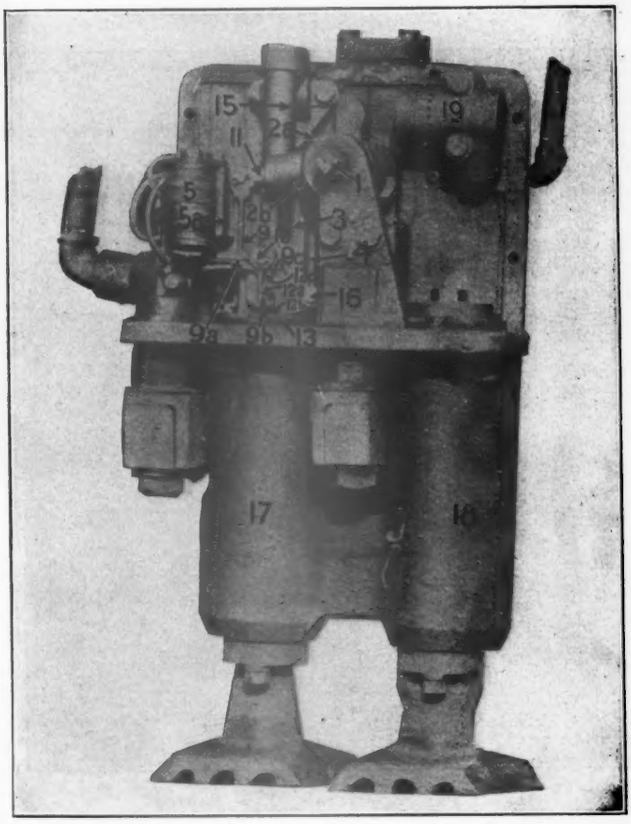
N. J., and Fairview. This is on the Northern Railroad division, about 10 miles from New York City.

Under this arrangement with the railroad company, the signal company is installing additional fixtures on both the eastbound and westbound tracks and has equipped locomotives No. 955 and No. 957, which are used on local passenger trains regularly between Nyack, N. Y., and Jersey City, N. J.

Preparatory to equipping the additional locomotives and additional block sections, an exhibition of the operation of the stop was made recently for the benefit of a party of officers of the road; and a summary of these runs is given below.

This apparatus, which was described, with illustrations in the *Railway Age Gazette* (April 13, 1917), after it was tested on the New York, New Haven & Hartford, is of the intermittent contact type, the ramp, 34 ft. long, being fixed 17 in. outside the running rail. The shoe on the locomotive, supported on the frame behind the driving wheels (or on the trailing truck if there be one) is lifted, and causes the opening of the air brake train line, at every ramp, but if the block section to be entered is clear and its track relay closed, an electric circuit, controlled by this relay, and extending through the ramp and the shoe, actuates an electro-magnet on the locomotive which immediately closes the air valve, before the triple valves have been affected; and the only effect of the lifting of the shoe is to exhaust enough air to sound a blast of about one second on a whistle in the cab. In other words, there is a proceed indication at each ramp approaching a clear signal. If no electric current is received from the roadway (indicating that the road is not clear to proceed), the exhaust of air sounds a blast on the cab whistle, which continues until the brakes are set, or until the engineman closes the valve, as he may do when he sees that his speed is sufficiently reduced.

There have been but few changes made in the detail of this apparatus since the description given in the issue of April 13, 1917. The cam shaft *1* and the main cam, *2*, have been made hollow and connected with the train line air. The plunger head, *3*, with its contacting projection, *4*, have also been made hollow and connected with the train line air so that now each portion of the apparatus that is used in the valve-opening operation is so designed that its breakage



Webb Automatic Brake-Setting Machine

or removal would exhaust the train line air to the atmosphere. The armored hose has been superseded by a stationary piston, *15*, for connecting the train line air with the plunger head, plunger and shoe. The magnet bracket *5a*, is now made an integral part of plunger head *3*. The path-clearing plunger *18* has now been made an integral part of the box design. The manual reclosing operation is now accomplished through cylinder *19* and its piston, instead of the slide formerly used.

As the train-carried fixture passes over the ramp, the

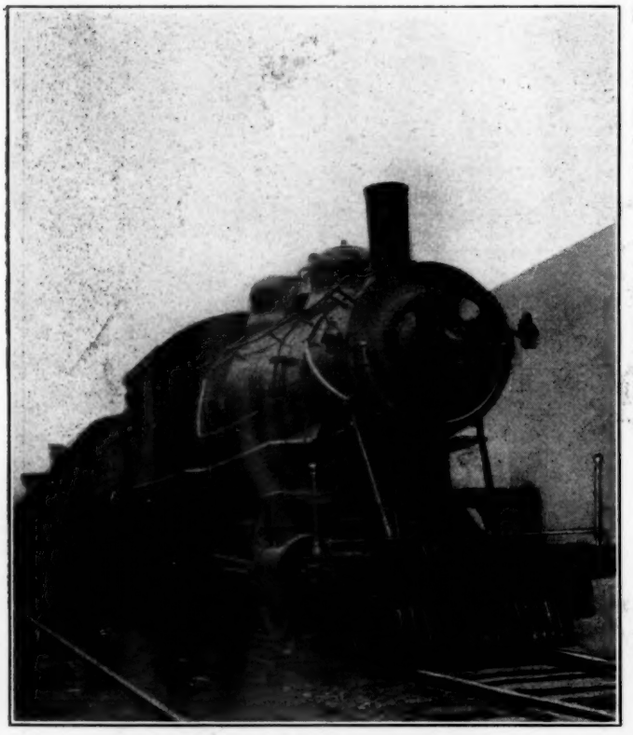
operating plunger is lifted vertically and projection *4* engages cam projection *2-A* oscillating the main cam, *2*, with its shaft, *1*; opening the air valve by means of the valve cam which is also fixed on shaft *1*, so that the train line is vented to the atmosphere. If the track relay is in the stop position no further action takes place; and as the plunger resumes its normal position, after passing the ramp, the air valve remains open and the train is brought to a stop in the usual manner.

If, however, the indication is clear, the electric current controlled by the track relay energizes magnet *5* and causes the bolt lever, *9*, to project the bolt, *11*, so that in the downward movement of the plunger the bolt restores the main cam and air valve to their normal positions and no braking action takes place. Both the opening and closing of the air valve are direct mechanical operations.

In this installation on the Erie Railroad, there is no distant signal or line relay. The circuit to the ramp, which is located approximately 1,600 ft. in the rear of the signal, is controlled by the track relay and a circuit breaker operated by the signal itself.

Details of Tests

The tests referred to were nine in number, eight as scheduled and the ninth to take the place of the fourth, as explained below. They were made with locomotive No. 955



Local Passenger Train, Erie Railroad

and eight steel coaches, some of the runs being made, however, with a five-car train.

Test No. 1—Semaphore at stop; ramp passed at full speed as if the engineman were dead. Speed at ramp 40 miles an hour; train stopped, against steam, 1,113 ft. after passing ramp and 493 ft. short of the semaphore.

Test No. 2—Semaphore at stop; ramp passed at full speed. Brakes automatically applied, but before the train came to a stop the engineman, with the optional release, reclosed the air valve, this to save time and to avoid unnecessary stopping and starting, as would be the case with a long freight train. The engineman closed the valve about 800 ft. from the ramp and coasted to the semaphore, where he stopped by using his brake valve.

Test No. 3—Eight-car trains; speed at ramp 37 miles an hour; train stopped automatically 419 ft. short of the signal.

Test No. 4—Semaphore at stop; ramp passed at full speed. As soon as the audible indication in the cab showed that brakes were being applied, the engineman made an emergency application with the engineer's valve.

Speed of train at ramp 40 miles an hour; train stopped automatically 974 ft. from the ramp and 632 ft. short of the semaphore. In this test both of the contact shoes were broken off when they came in contact with the ramp rail, evidently because of imperfections in the castings and their worn condition due to previous use. On account of the shoes breaking before they had reached a point on the ramp rail sufficiently high to raise the operating plunger, no audible signal was given in the cab. The train, however, came to rest automatically, as stated above, the breaking of the casting serving to exhaust the air from the train line. New shoes were put on and the tests continued. During the preparation of the program for the tests, the advisability of interposing an obstruction that would break the contact shoes was freely discussed, but it was finally decided to omit such a test, because of the possibility that the obstruction might result in damage other than the breaking of contact shoes. Therefore, this breaking of the shoes under normal service conditions provided a specially interesting demonstration.

Test No. 5—This was simply to demonstrate the audible "proceed" indication.

Test No. 6—In this the semaphore was left at proceed, but the roadside battery was disconnected; speed at ramp 45 miles an hour; train stopped automatically 448 ft. short of semaphore.

Test No. 7—Semaphore set in proceed position; magnet wire disconnected from binding post on plunger-head of engine apparatus. Speed of train at ramp 45 miles an hour; train stopped automatically 431 ft. short of semaphore.

Test No. 8—Semaphore held in the proceed position by mechanical means, and track relays de-energized. This was to illustrate the case of a false clear visual signal.

Test No. 9—Repetition of test No. 4 as originally planned.

All of the tests were satisfactory. Both the railroad and the manufacturers had special inspectors on the train, and on the ground to make detailed written notes of each test.

Photo by Keystone

A Railway Scene in Ireland

Essentials of Progressive Motive Power Policy*

Recent Improvements in Locomotives Afford Opportunities for Reducing Transportation Costs

By G. M. Basford

LOOK BACK a bit. Only a short time ago—only a lifetime—people were 20 days on the road from New York to Buffalo if lucky, if wheels lasted and oxen or horses did not break legs and if food held out. It is different today, when a few hours of luxurious comfort brings us over these few miles with speed and security.

But I am going to say that we do not use our transportation blessings as well as those pioneers used theirs. We have the wonderful steam locomotive. It was here when those pioneers really began to build our great West. But now we have a new steam locomotive. It has been made new in our time, but we are not taking advantage of it. From an efficiency and economy standpoint the new one is as far ahead of that of 1835 as the one of that date was ahead of oxen and horses. If this appears to you to be an exaggeration you must lose no time to learn what has happened in our generation.

Those pioneers had "engine failures" with their Prairie Schooners; they were family tragedies. We have them now. We should not. The Prairie Schooner was not "bought on price." Quality and performance was the thing. When you place performance ahead of price you may have locomotives that will save the railroads.

How often important contributions to the solution of problems, if not the actual solutions, lie so near us that they are overlooked. How often we seek a panacea when what we need is something we already have but do not appreciate! Of this there is no better example than that of the steam locomotive of this wonderful, resourceful country. One of our most vital needs today is the application of good American common sense in allowing the locomotive to play the part it is completely ready to play in the reduction of the cost of transportation, providing we establish suitable locomotive policies.

With respect to the locomotive "policy" means a charted course using all established and safe aids to bring the craft to its logical destination. That destination is "the most tons moved for the least money." After "policy" there must be a plan based upon the fundamental principles of the policy and then a program to execute the plan.

Engineering Improvements Should Be Utilized to Cut Costs

No matter what else we do ours will be a sorry sort of railroading if we fail to find in the treasurer's office the results of the efforts of those who have spent the past 20 years in showing how to increase locomotive power per pound of metal and per pound of coal and who have proven their ability to do it. I say 20 years but it is more than 30 years since this work began. Some of the men who inaugurated this development builded better than they knew. I am thinking particularly of David L. Barnes, George S. Strong, M. N. Forney and H. F. Shaw.

They have many able successors who have worked with factors unknown or undeveloped in the days of engineers who lived a generation ahead of the rest of us and two generations ahead of their own contemporaries. These successors have produced big powerful locomotives, both freight and passenger, that surpass the highest flights of imagination of the men mentioned. For example, a passenger locomotive that will produce at the rate of a cylinder horse power per hour from 16.5 lb. of water and 2.20 lb. of coal and that weighs 121 lb. per cylinder horse power. This was done ten years ago. Lots of engines have been built since that time that cannot do as well. Another example is a magnificent big freight engine with 90,000 lb. tractive effort that will produce one cylinder horse power from 15.4 lb. of water and 2.00 lb. of coal and that weighs 90 lb. per cylinder horse power. This has been done. Do those to whom they mean most know these facts? Do they make full use of them? These are isolated cases showing possibilities, but current practice is far behind them. Every new engine on every railroad ought to be designed and built to equal and surpass the records just referred to.

It is most important to all of us to know the reason why the locomotive on most of our railroads falls so far short of what it may be, should be and must be if American railroads are to "make good" in the present emergency.

Locomotive Improvements Have Far Reaching Effects

Right now railroad officials are striving to increase efficiency and reduce cost as they never did before. Results in car loading and train loading have been great. But no matter what else is done to increase efficiency and reduce cost, bear in mind that improvement of the locomotive augments the effect of every other improvement that can be made. Everything done to make an engine pull more tons per ton of its own weight and per pound of fuel burned helps everything else you do to improve the efficiency of transportation. These facts are not as prominent in the minds of operating officials and of executives as they should be. Why? The locomotive today at its best is not understood by those officials as it should be. Why? Locomotives in everyday service may be made to produce at the rate of less than three pounds of coal per indicated horsepower. Why are so few of them doing this? Can they be made to do it? By co-operation, yes!

Motive power matters must be presented, discussed and decided on a new and appropriate basis. A man of wide experience has said "Whatever the locomotive can do, the railroad can do." As the business of the road is moving trains, that business will be most successful when the mover of trains, the locomotive, is what it should be, is designed, built, operated and maintained to the best advantage.

One of our difficulties is that we are so close to the locomotive as to tend to regard it as we always have regarded it—as a machine that we know all about. We did know all about it as it was in our boyhood but unless we have kept step with the improvements of recent years in locomotive matters we are far behind the times.

We are slow in taking advantage of money making improvements. Forney used to say "The human mind resents the intrusion of a new idea." This is true. The slow progress of locomotive improvements in this country proves that he was right. Europe and Canada led us in the introduction of the greatest improvement that the locomotive ever enjoyed. Europe has 14,000 applications of another improvement that is only just starting in this country, and what country needs these things more than we do?

We need to bring our locomotive problem to the front. We need to elevate it to its proper place in railroading. We need

* A paper presented before the Central Railway Club, January 12, 1922.

to give it the attention it deserves. We need to discuss it and decide the questions it presents by and with men who know and who should and must be heard. Let me ask a few simple but important policy questions that call for answer on every railroad, that are being answered in part by some roads but not as a whole by any road.

Pertinent Questions Concerning Motive Power Policy

What is your policy with respect to locomotive improvements, those factors that collectively give you, according to speeds, from 30 to 80 per cent more power per pound of fuel than you can get from a plain engine? What are you doing about these things when you order new engines and what are you doing about applying them to old ones?

What is your policy with respect to locomotives that for the next 20 or 30 years will be in these services: heavy freight, fast freight, way freight, fast passenger, slower passenger, branch line passenger and freight, yard switching, transfer?

What is your policy and plan with respect to the design of new engines for these widely varying duties? Who decides their earning ability for their working life of 20 or 30 years?

What is your policy with respect to assignment of locomotive power to meet varying conditions of traffic, seasonal or emergency conditions? If this is not done by those who ought to know most about power matters there must be a reason for it.

How do you know just how many new engines to order and what type and capacity to order? Is there a plan for this that looks ahead to that which is coming and is framed on experience of the past?

How do you know that the latest new engines are making good? Do you test them and keep records to show whether your locomotive engineering policy is correct and whether you are making the money from your new engines that you ought to make?

What is your attitude toward locomotive improvements as to application to older engines? Are the applications scheduled after careful, complete surveys of the power and are the improvements applied by program, systematically? Then do you organize to educate the men in the best use of the modernized engines to get the utmost returns for the investment? When you apply a locomotive improvement that is good for 25 per cent greater economy are you sure that you get that economy?

What is your policy with respect to scrapping old power and also obsolete shop machinery? Is it done systematically to take advantage of improvements as Andrew Carnegie did? Did it pay Carnegie to do it?

Do you have and follow an engineering or business policy with respect to your locomotives as a manufacturer does with respect to his investment in his expensive machinery?

How do you know that the enormous investment in locomotives themselves and in the facilities for repairing them are employed to the best advantage? Do you, as one railroad official does, hire a man, a specialist, to organize the use of every locomotive item on which he spends $100,000 a year or more?

Do you know that the mileage engines are making is what it should be and may be? Are you hampering operations by the old time idea that each division is a separate railroad? A passenger engine recently made a run of 1,000 continuous miles without uncoupling from the train. Regular continuous runs of 400 to 600 miles are being made. Are your engines making above the average of 60 miles per day? Herein lies a gold mine.

Are you sure that shops, shop equipment, locomotive terminals and terminal equipment are adequate to get the power back into service promptly and keep it in service continuously until time for the next shopping?

Do you know whether the internal friction of the 2-10-2 type locomotive is greater than the formulæ of the locomotive designers indicate?

Do you know that new locomotives can be built with improvements in design that will permit of safely deferring increases in weight of rail and strength of bridges for years to come?

Are you aware of the fact that the biggest, most powerful passenger engines in the country can be replaced by others that will stress the track and bridges less than the present engines and yet give enough increase in pulling power to reduce double heading and that improved engines will start and pull heavier trains than have ever been put behind any engine yet constructed? I refer to usual main line traffic.

What policy are you following with respect to signaling in relation to locomotive improvements that permit of more rapid acceleration in starting out of sidings, out of yards and across crossovers? The entire question of block signaling, siding locations and location of water and coal stations is opened up anew by the ability to accelerate trains faster and to make longer runs for coal and water. Our railroads were built for the saturated steam locomotive without the vitalizing factors of today. Is your road coming up to date in its use of these epoch making operating factors? If you consider these as mechanical matters and if you regard signaling as a safety measure alone you are missing something. Operating officers —ask signal engineers and mechanical officials to help you operate the road. They are in position to help as they never have been before.

Do you establish a definite plan covering the next three or five years with respect to your locomotive program? Do you keep in mind the fact that new locomotives will last 25 or 30 years and that your record of intelligent grasp of railroading is to be read by others after you are gone?

In the matter of water stops—have you thought of the effect on operating cost of the capacity of tender tanks on freight engines? Do you realize that applying new design tender tanks carrying 15,000 gallons of water would beyond question save more money in direct operating results on some railroads than anything of equal cost that you can do to a freight engine on congested track today with the possible exception of the application of a booster?

Of all these questions the most important today in long range results are the ones that involve the locomotive in its relation to track and bridges and the locomotive in its relation to the use of fuel, but all of these items are important. They are not referred to critically but constructively. There is a way to answer all of them. Some of them already have been answered on some roads. There are men who know the answers. The thing to do is to make it easier for these men to be heard.

Improved Locomotives Demand Changes in Operating Methods

Our railroads were built for the locomotive of the past. They were and are operated in accordance with the locomotive of the past. But the locomotive has changed faster than the methods of using it. A new, refined, efficient power plant is available to take the place of the one that was merely big and heavy. Those who operate our railroads must learn what has happened. For their own sake, the sake of the properties and of the people they serve they must take advantage of the locomotive as it may be, not as it is, to solve the greatest problem they ever faced.

Mechanical men must prepare the case of the improved locomotive and that of the refined locomotive that is ready but has not yet been built. They must be ready to recommend improvements on the new basis—that of their effect on operation and operating costs. They must be ready to present the possibilities of the new locomotive in helping solve track and operating problems. This is merely a matter of preparing for presentation facts that they know thoroughly, but have not been encouraged to present. Mechanical men—perhaps a change in status of the locomotive is coming. Be

prepared. Your part in it is vital. Your preparation for it will hasten the change.

Then a way to insure not only the presentation but consideration, discussion and decision of the power problem must be found. The locomotive must be viewed from a new angle. We have been deficient in our conception of it, and of its proper place in operation of the road and in the transportation of the country. Some of us have considered it from the standpoint of a mere pulling unit, not thinking deeply as to anything but drawbar pull. Some regard it merely as a machine that they must take care of and have ready for call. Others have considered it from the standpoint of a power plant very much like any other power plant, as a unit by itself, built and therefore fixed as to improvements. To others the first expense involved seems to be most important. Some look at the expense of maintenance, and these are prone to regard the bookkeeping of the locomotive as satisfactory without a real bookkeeping balance that shows maintenance in terms of the tons the engine hauls. Its effect on track and bridges is the vital matter in the minds of others.

Many Cost Factors Affect Locomotive Policies

We must get people together to talk these things over and show that not one of these opinions taken alone is correct. When engines were small, rates high and wages low these various points of view were natural and were not dangerous, they are nothing less than dangerous now. We must wake up to the great necessity of a locomotive policy that will bring all views into line to permit the use of the best possible transportation machines, because the locomotive pulls everything that goes over the railroad. It must be designed, operated and maintained in accordance with broader business, engineering principles in view of the requirements and the known possibilities of achievement.

Coal formerly cost 90 cents and now costs $4.00. Rails formerly cost $21.00 per ton and recently $47.00 was the price. An engine "simple as a grindstone" is a mighty expensive article to operate today but thousands of them are running that may and should be made efficient by improvements that everybody knows about and everybody accepts as satisfactory. Why don't we use these to the limit?

These improvements have revolutionized the locomotive art. They will revolutionize locomotive operation. Let us hasten the day when the locomotive is considered as a real part of the great transportation machine. It is a big part of the transportation machine. Above all other things every part of a machine must fit each other part. Otherwise a machine is impossible. The locomotive must fit track, tunnels, terminals and other factors, the least change in which means prohibitive cost where bigness and weight and the increased power that go therewith must give place to improvements and refinement that render greater weights unnecessary. It is time to disregard first cost and think of ultimate cost, to forget the limitations of the past and to build anew for the future. It is time to build every new engine on a new plan—to build it for high power with efficiency. Nothing that is known to be worth while and that increases real efficiency should be omitted from a new engine.

An improvement costing $10,000 to buy and even as much as that to maintain each year is a good investment if it nets a saving of $50,000.00 a year. You know what it costs. You do not know what it saves. It is good policy to double the first cost and the cost of maintenance if thereby locomotives will haul enough more tons or make enough more miles to show figures on the right side. This is one way to cut out red figures. How really absurd it is to live as we do in "comparative" figures instead of in constructive figures.

How Shall Recent Improvements Be Utilized?

In its 50,000th locomotive the American Locomotive Company in 1911, over ten years ago, set a pace for Pacific type passenger engines. That engine has proved the success of careful design, use of improvements then available and incidentally of cast steel cylinders and light parts that saved nearly nine tons of weight. But this engine, today among the very best of its class, can be given 25 per cent more power in starting and at high speeds without excessive weight addition.

In its class I1s the Pennsylvania Railroad set a pace for heavy freight engines. Those railroads which have applied capacity increasing factors to their older engines have set a swift pace toward reducing the cost of pulling trains.

How shall the improvements that rendered these two efficient designs possible and also vitalized so many older engines be used to bring the locomotive to "its own" in the possibilities of the future?

To answer—Put the officials who know most about these matters, those who are closest to their progress, those who know most about the difference between the best locomotives of today and those of only a few years ago, put them in position to be heard. Let them understand that they will be heard and tell them to prepare their case accordingly. Today they are on the defensive. Change their status. Let the operating officers who depend upon the roadway and the power, present their problems that relate to both of these factors and then the great operating factors—power, signaling and operation—may be considered as a whole. Nothing new is needed, but a new way of tying these together is imperative.

Power matters are not the only ones that call for new methods. Operating, purchasing, mechanical, accounting, legal, traffic, track and personnel questions, all would benefit by a new deal in organization. If each of these broad divisions of policy on a large road were presided over by a vice president, if these vice presidents or on a small road the equivalent worked regularly and consistently together as a cabinet of highly trained specialists, if every important matter affecting operation were discussed by all these men—leaving to a senior vice president final decision, the thing now lacking would be supplied. The cabinet form of working together is the essential thing.

For example—one official is convinced that heavier rail sections are needed, or that certain bridges need reinforcement. He is probably of the opinion that locomotives will become heavier and heavier and that he must keep pace with the increase in weight. The officer in charge of power will show that for the immediate future increase in locomotive weight is not necessary, in fact, is wrong, and that he can build new engines more powerful but lighter and less destructive to the track than present ones. Operating men want more drawbar pull. To appreciate the possibilities of more power without excessive weight they should take part in discussions that reveal these possibilities. Some officers believe that with a certain amount of money to spend, the largest possible number of new engines should be bought. They may be shown that a smaller number of more efficient engines is the better and financially safer plan. Some officers find it difficult to see the necessity for investing liberally in shop tools, labor saving cranes and hoists, in ash pits and coal handling equipment. They would be quick to see the need and would give their support if they were shown how these factors affect operation. No officer considers first cost when "safety" is at stake. No officer would consider first cost as the real cost if he was a member of the cabinet, whose deliberations formed the basis for the broad policies for the future.

Factors That Will Improve the Economy of Locomotives

To be specific here are some of the factors that will come into the plan that a policy will compel:

Improved cylinder operation, higher superheat and improvements in cut off such as cut off control. Ask the officials

of the Big Four about their cut off control as a factor in operation and in saving. Are we to wait years before getting the benefit of what they have done? Why not get it now when we need it most?

Increased boiler efficiency through feed water heating using waste heat and by improvements that compel greater boiler power through improved boiler circulation.

Increased starting power by means of the booster applied to trailing wheels.

Increased starting power and higher power at speeds by means of increased weights on drivers made possible by reduced dynamic augment. Alloy steel parts and refined design render this improvement available.

Improved conditions of combustion by application of the latest developments of the locomotive firebox as a furnace. This means improved fireboxes, more extended use of firebrick arches and mechanical stokers.

Weight per cylinder horsepower may be materially reduced by locomotive designers who are given the order to do their best in this direction. Up to this time they have never had a chance to show what they can do. They have much to offer.

The time has come for these refinements and for many others that are very important but which are not specifically mentioned for lack of space. The time has come for the "free hand" to bring prevailing locomotive practice up to the economically high plane that a few isolated cases have shown to be easily attained.

Savings Will Justify Increased First Cost

The able engineers of the electrical companies long ago learned that the electric locomotive required facilities for its operation and its maintenance that however needed had never been given to the steam locomotive. They spoke. Operating officers and executives listened. They listened because electrification was new, interesting and mysterious. Furthermore, the necessary words had power behind them to compel attention. When trains were stopped by fuses blowing, the fuses being located in a signal tower with no night attendant, the president of the electric company called the president of the railroad on the phone next morning and the thing was fixed. Does the steam locomotive have such attention?

At present the electrical people are making good use of the prevailing oversight of the possibilities of steam. Is this to continue? Is the country to pay the price of this oversight? Are the electrical propagandists to be allowed to get away with even misrepresentations of the efficiency of the steam locomotive?

Consider the high regard in which marine men and manufacturers hold their power plants. They know their dependence upon the power that drives their business. They understand that the power plant that is driving all the time or most of the time must be of the highest type and the most economical, that it is a big investment and must be used accordingly, that ultimate cost, not first cost, is the real cost.

Recent years have brought to the steam locomotive improvements that are comparable with those in marine and stationary development. Marine and manufacturing operations have been rebuilt because of power plant and power distribution improvements. New operating methods must come as a result of the locomotive improvements we are talking about.

It remains to do on railroads the thing manufacturers have done—to build better locomotives, improve old ones and to operate them according to the new conditions these improvements themselves have created. In short, to save fuel and lots of money.

Our locomotive builders are the best in the world. They are building and will build what you want. Why not wake up to what you need and get it? Not only our builders but the concerns that have developed locomotive improvements that are so important have engineers at home and abroad preparing the best, the latest, and more than that, the practical plans needed for the future. One of the builders sent its highest engineering authority to Europe where he spent more than a year in the study of locomotive design and operation under high priced fuel conditions. Then he designed No. 50000, which ten years ago was a milestone in locomotive progress and for ten years has been a leader in locomotive practice in several ways. But nobody wanted it. That cornerstone has been allowed to be obscured by bushes. Other cornerstones have been laid. Are they to go the same way?

Let it no longer be said with truth that there is not a single steam locomotive today on the rails of our country that embodies and represents the best, and all the best locomotive improvements that are available and that have proved their ability to reduce the cost of American railroad operation, of which we are so proud.

Its expense is the most prominent feature of the locomotive. The cost of everything about it is the thing that counts. This is the reason why it is impossible today to build the most economical engine. Of course it costs more to build and to maintain an economical machine than a crude or wasteful one. But cost is only one side of the question. The performance is the real side. Ton miles per locomotive dollar is wanted and no one is getting that figure. "What does it cost?" is the question asked. Change this question. Ask—"What will it do?"

If I were a railroad man I would put on my engines every single improvement I could find that would net a clear 25 per cent on the investment, and there are lots of them that I believe will double that return. Then I would make sure that all concerned understood the construction, maintenance and operation of the locomotive under the new conditions. Next I would see that the improved locomotive was loaded up to and operated to the limit of its economy and saving capacity. Remember that locomotive improvements give the best returns the harder they are worked. I would ask the operating officer how fast he wanted to go and then tell him how much load to give the engine. It would be all the engine could handle in order to pile up ton miles per ton of coal.

Supervision Needed to Get Results

This improved locomotive is different from the old "plain" ones. It will do more work or it will save fuel. To get these results requires more care, better handling by enginemen, better supervision and better operation. A few active young men could accomplish all this on any railroad and make every trip an engine runs a fuel test.

Talking "costs" without considering performance is a monumental mistake. It is my opinion that if the performance, in capacity and economy, of locomotive improvements were known, if individual locomotive fuel records were kept in parallel with ton-mile records, also for individual engines, the entire railroad organization would see a great light. "Acres of diamonds" lie at your feet.

Latent, potent, completely developed and successful but too little understood possibilities for the solution of one of our great problems lie at our very feet. To solve the problem of more tons moved for less money a policy is called for. Then there is no escape from the necessity for a plan followed by a program for its execution.

OBSERVERS AT BUFFALO predict a heavy eastward freight movement this month, believing that an enormous amount of freight was held back until after the end of the year to avoid payment of the federal tax. Certain shops of the Erie resume work this week.

SWEDISH RAILWAYS are using peat briquettes as fuel for locomotives. The Railway Board has acquired plant at Hasthagen bog, near Vislanda, with a capacity of 30,000 tons per annum, and a new method for treating peat on a large scale has been adopted. —The Times (London) Trade Supplement.

Chicago & Eastern Illinois Ends Receivership

Reorganized Property Left Hands of the Court on December 31, with W. J. Jackson as President

DECEMBER 31, 1921, witnessed the end of an 8½-year receivership for the Chicago & Eastern Illinois, thus marking the close of the interesting chapter in the history which began 20 years ago when it was brought under the domination of the St. Louis & San Francisco. The Frisco regime was one of expansion. An entrance into St. Louis was obtained through construction and lease, the Evansville, Indianapolis & Terre Haute was purchased, the 62-mile Villa Grove-Woodland cut-off was constructed and plans were laid for a line from the southern Illinois coal fields into Peoria. The receivership period, which began in May, 1913, was one of contraction and concentration. Weak, unprofitable lines were lopped off and the good ones strengthened. Eight years ago the C. & E. I. had a secondary line, paralleling its main line for the 239 miles from Momence, Ill., to Evansville, Ind. Today the property is no longer encumbered by this superfluous route. The lower leg of this, the Evansville, Indianapolis & Terre Haute, was disposed of finally by sale to the Cleveland, Cincinnati, Chicago & St. Louis during the past year. The northern portion, the Chicago & Indiana Coal Railway, extending from Momence, Ill., to Brazil, Ind., with a branch to La Crosse, Ind., was eliminated by omitting it from the parcels of property purchased by the new Chicago & Eastern Illinois Railway Company at the foreclosure sale on April 5, 1921, and application has been made to the Interstate Commerce Commission for the abandonment of this line.

W. J. Jackson

As now constituted the Chicago & Eastern Illinois consists of about 960 miles of line, comprising a main stem from Chicago to Evansville, Ind., a line to St. Louis branching from the Evansville line at Woodland, Ill., and a line into southern Illinois leaving the St. Louis line at Findlay, Ill. Branch lines and connections make up about 260 miles in addition. Approximately 50 per cent of the traffic handled by this road is coal from the southern Illinois and southern and western Indiana coal fields. The lines also handle a heavy through passenger business between Chicago and Evansville and between St. Louis and Chicago.

The elimination of unprofitable lines is by no means the only advantage accruing through the reorganization which was completed at the end of the past year. Although the capital liabilities have been reduced only from $94,204,448 to $91,033,750, there has been a marked reduction in the fixed charges—from $3,759,996 to $2,327,051. The securities now outstanding consist of fully 51 per cent of stock, whereas under the old status only 21 per cent was in stock. The property is also in a much better physical condition as a consequence of a conservative yet consistent improvement of the revenue producing lines. Approximately $7,000,000 was expended in additions and betterments during the course of the receivership. A large mileage of 90 lb. and 100 lb. rail has been laid, passing tracks have been extended and minor additions have been made to yards. Considerable additions and improvements have been made to shop and engine terminal facilities, principally at Danville, Ill., and at Salem, and a new outbound freight house and a general office building were built at Chicago. Extensions to double track have been of rather small mileage but one of those in the vicinity of Okaw creek involved the building of a $275,000 concrete arch bridge and closed the gap in double track between Chicago and Findlay, the junction of the St. Louis and the southern Illinois lines. A program of bridge strengthening was also carried out, permitting the operation of new Santa Fe and heavy Mikado locomotives. Train operation has been expedited by an increase in automatic block signals and an installation of automatic train control from yard center (Chicago) to Danville.

The credit for the progress which this property has made during the past 8½ years must be placed primarily with William J. Jackson, who was elected president of the new corporation on December 31, 1921, for he has been executive head of the road ever since the receivership—as receiver and president of the corporation, except for the period from April 27, 1918, to March 1, 1920, when he served as federal manager. Not only has he evinced prudence in directing expenditures for improvements with the modest funds at his disposal but, possessed of an aggressive personality, he has developed the railway's coal traffic to its financial advantage and has placed the Chicago-St. Louis passenger business on a thoroughly established basis in spite of strong competition.

One element which has accrued to Mr. Jackson's advantage in obtaining favorable results on the C. & E. I. has been an aptitude in handling men. His thoroughly democratic character and manner combined with a prestige that comes to him through a 30-years' service with this property has served to make him very popular with his men. A hard worker himself, he requires good service from those working for him, but he does it with a consideration that inspires loyalty. His intimate knowledge of labor matters was recognized outside railway circles in his appointment by former

Governor Deneen as a member of the Employers' Liability Commission of the State of Illinois.

William John Jackson, was born at Toronto, Ont., on December 28, 1859, the son of a hardware merchant. His education was limited to that obtained in the grammar and normal schools of Toronto and he entered railway service in 1877 as a machinist's helper in the Grand Trunk shops at that place. After a few months he was transferred to the freight department and for three years was a freight clerk at Toronto and for the following three years, chief claim clerk of the Chicago & Grand Trunk at Chicago. From August, 1885, to November, 1890, he was general freight foreman and from November, 1890, to August, 1891, he was assistant agent for the same road at Chicago. The beginning of his career with the Chicago & Eastern Illinois came in August, 1891, when he entered the service at Chicago as assistant local freight agent. He was promoted to agent in January, 1893, and to assistant general superintendent in 1899. On February 1, 1903, he was promoted to general superintendent, a position he occupied until November 15, 1906, when he was advanced to general manager. On December 3, 1909, at the time of the separation of the Rock Island and the Frisco systems he was made vice-president and general manager of the C. & E. I. and of Evansville & Terre Haute, which was later absorbed by the C. & E. I. In this position he was the active head of the properties for a little more than three years prior to the receivership.

Outside of the work for his own company, Mr. Jackson is well known among railway men through his work as chairman and member of the Special Committee on Relations of Railway Operation to Legislation, former chairman and member of the General Managers' Association of Chicago, and former chairman of the Association of Western Railways.

Free Life Insurance on D. & H.

L. F. Loree, president of the Delaware & Hudson Company, in a circular to employees dated January 1, announces a contract between the D. & H. and the Metropolitan Life Insurance Company, of New York, under which all employees who have been in the service of the road two years or more and who make application on prescribed forms, may have free life insurance to the extent of $500; and may take, at very low rates, additional insurance, up to an amount equal to their respective annual salaries (but not over $5,000).

The Delaware & Hudson operates 900 miles of railroad and employs about 15,000 men. The circular offering this very substantial bonus is given below practically in full:

President Loree's Announcement

1. The Delaware & Hudson Company has entered into a contract with the Metropolitan Life Insurance Company by which it has insured the lives of all employees who have been continuously on its payrolls for more than two years, and who are actually and actively in its service on or after this date, securing for each employee having such minimum length of service, irrespective of the nature of his work, his age, or the state of his health, and without cost to himself, a policy payable at death in the sum of $500.

2. In case of total and permanent disability, the sum of $500 will be paid to the insured employee in monthly installments. In case of death, payments will be made immediately to the beneficiary named by such policy. The contract also permits groups of employees who wish to do so, to take additional insurance, without medical examination and without reference to age, at the exceedingly low rates herein set forth.

3. To all such employees, who have been continuously in its service two years or more, wishing such additional life insurance, or protection against sickness or accident, the Company makes the following offer:

1. If any group of employees take, under this plan, more than $500 additional life and total disability insurance, for each member, the company will pay the balance of the monthly premiums above the amount stated below, on such additional insurance in excess of $500. A group, under this plan, must consist, under the life insurance law, of not less than three-fourths of the employees in any class; application therefor must be made before March 31, 1922; no employee can be insured for more than $5,000, nor for more than the multiple of $200 nearest his average compensation for the preceding two years. A group may consist of employees of the same class; as, for example, locomotive engineers, station agents, boilermakers, etc.; or, it may consist of those employed at the same place or within the same area.

Under this plan every employee with two years' length of service receives $500 life and total disability insurance without cost. By co-operation with a sufficient number in his class, and the aid of the company, he can have a total of $1,000 for 60 cents per month; $2,000 for $1.20 per month; $3,000 for $1.80 per month; $4,000 for $2.40 per month; or $5,000 for $3 per month; subject to the maximum limit above indicated. The cost in excess of these amounts will be paid by the company. Not only is the full amount of each policy payable to the beneficiary in case of death, but it is also payable in case of permanent, total disability, whether from accident or sickness. In case of total and permanent disability, the life insurance company undertakes to pay the full amount of the policy in sixty monthly installments beginning within not more than six months.

2. A policy covering loss of work by sickness is provided for, under which the benefits are at the rate of $15 per week for a period of 26 weeks, beginning with the eighth day of incapacity. The premium on this insurance is $1.26 per month, or $15.12 per year, and must be borne entirely by the policyholder. Application must be made, before March 31, by a group, as previously described.

3. A policy covering loss of work by accident, exclusive of injury covered by workmen's compensation laws, is provided under which benefits are at the rate of $15 a week for a period of 26 weeks, beginning with the eighth day of incapacity. The premium for this insurance is 24 cents a month, or $2.88 a year, to be paid by employees. Employees under 60 years of age may also obtain accident insurance covering death or dismemberment from any accidental cause, including accidents covered by workmen's compensation laws, at the rate of $4 a $1,000, to be paid by employees, the total of such insurance not to exceed the amount of life insurance carried under the plan; application to be made before March 31, by a group, as previously described.

4. The company will undertake directly to insure employees against unemployment resulting from dismissal for any cause, providing payments of $15 (employees whose average annual wages during the preceding two years do not exceed $1,000 will be paid $10 per week for the same period) per week for six weeks, or for so much of that time as a discharged employee may be unable to find employment, conditioned upon such employee having subscribed for and contributed toward the cost of at least two of the three forms of insurance provided under the group plan, as above outlined.

This provision for unemployment insurance is prompted by the desire of the company to provide continued employment under conditions as favorable as possible, to promote greater ease in the conditions of employment by freeing the employee from anxiety, and to secure and maintain the most highly successful operation of the property, which is obtainable only through interested co-operation.

5. The company proposes to continue its present system of pensions, under which, in its discretion, pensions are granted to employees who have been in service of the company 25 years or more, and who have reached the age of 70, or who, upon reaching the age of 65, are incapacitated for service, and under which a monthly sum to be paid to the pensioned employee is determined equal to one per cent of the average monthly earnings of the employee during his preceding ten years' service multiplied by the number of years of service with the company.

Those employees who have not been in the service of the company the full two years, will be included in this insurance plan, and entitled to all the benefits thereof, as soon as they have completed two years of continuous service.

Employees leaving the service of the company for any reason will be able, upon notice, to the life insurance company within 30 days, to exchange their certificates without medical examination for policies in the same amount, but will thereafter pay the regular rate for the ages at which such new insurance is subject to.

Employees who have been with the company as long as six months, but not for two years, will receive identical life and disability insurance, without expense to them, in the sum of $250 and may take not more than $250 additional, in groups, at a monthly cost to them of 18 cents. On attaining two years of service, such employees will become entitled to all the benefits of the plan.

The within plan and offer are wholly voluntary on the part of the company, which reserves the right to discontinue or modify the plan and these offers, at any time. In case of the discontinuance of the plan, the life insurance company undertakes to issue, to any employee requesting the same, provided individual application therefor is made within 31 days of the date of such discontinuance, a new policy or policies, upon plans applicable to the character of the risk, in equal amount or amounts, without medical examination, but at the ordinary rate for insurance at the age of the applicant.

I. C. C. Members Appear in Capper Bill Hearings

Explain Action in Ex Parte 74 and Urge That Rate-Making Law Be Given a Fair Trial

WASHINGTON, D. C.

THE SENATE COMMITTEE on Interstate Commerce on January 5 brought to an end the hearings which have been going on intermittently since October 24 on the Capper and other bills to amend the rate-making provisions of the transportation act. The final witnesses were three members of the Interstate Commerce Commission, who appeared at the request of the committee and expressed the opinion of the commission that it would be a serious mistake to amend the law as proposed. The committee will now proceed to a final determination as to whether a bill shall be reported, but it is understood that it proposes to wait for a time before taking definite action, for a decision of the United States Supreme Court in one of the cases involving orders of the federal commission requiring advances in intrastate rates, so that it seems very unlikely that there will be any legislation by Congress before the 5½ per cent provision of Section 15-a expires on March 1.

Commissioners Hall, Esch and Campbell Appear

H. C. Hall, who has been reappointed as a member of the commission, although the appointment has not yet been confirmed by the Senate, outlined in detail just what the commission did in advancing rates in Ex Parte 74 and in the subsequent proceedings involving intrastate rates, to show the committee that there was no foundation for many of the statements that had been made before it by witnesses representing the state commissions and western shippers of agricultural products who were advocating amendments to the act. He was followed by Commissioners Esch and Campbell, who made brief statements urging that the rate-making provisions of the law be given a fair trial.

How the $18,900,000,000 Valuation Was Reached

Mr. Hall gave some hitherto unexplained details of the method by which the commission arrived at a tentative valuation of $18,900,000,000 for the railroads. He denied the assertion frequently made that the property investment accounts of the railroads were taken as a basis and said that the equivalent of the work of one person for four years was required in its bureaus of valuation and statistics in assembling the figures in the possession of the commission from which the figure was finally arrived at. Before the hearing on the rate advance began, Mr. Hall said, Commissioner Aitchison was designated to take charge of the compilation of the data to be used in fixing the value.

Mr. Hall read from a statement prepared by Mr. Aitchison outlining the methods used in preparing the voluminous tables and schedules which were placed before the commission for its decision. This work represented 572 days of service of employees in the Bureau of Valuation and 494 days service of clerks in the Bureau of Statistics. The commission, he said, felt called upon to use to the fullest extent the results of the investigation made under the valuation act since 1913 in so far as it was deemed available. This was largely in the form of working papers and all results produced by the years of work by the bureau were utilized both as to particular roads and as to general principles. The facts taken into consideration were the original cost, the cost of reproduction, depreciation, amount of investment, corporate history of the property, the value of lands, and other values or elements of value. The commission also had before it the property investment accounts, which had been under the supervision of the commission since 1907, although it had not been possible to thoroughly police these accounts during that time and a thorough study was made of the results of such inspections of the accounts and corrections of errors as had been made in particular investigations by the commission. There was also an investigation of the amount and distribution of additions and betterments that had been made since the date of valuation and of the amounts of working capital, materials and supplies, etc., on hand. The commission also had the earning power of the carriers under different levels of rates and the results during the three-year test period. Consideration was given to all these matters and the resulting sums were capitalized at various percentages.

The value finally determined, Mr. Hall said, happens to be the capitalization of the standard return on which the guaranty for the period of federal control was based, at 5¼ per cent, with due regard for additions and betterments, working capital, etc. "We had all these things before us and our minds finally settled on a figure," he said. "We didn't take $18,900,000,000 and then distribute it; we worked up to it. We took all the testimony and considered it and our judgment in weighing it represents the composite of many minds." He pointed out that the carriers had claimed as their property investment, $20,040,000,000.

In reply to a question Mr. Hall said that compilations based on the present market value of stocks and bonds are "not dependable." Testimony on that was offered the commission but no special study on that point was made by it.

Intrastate Rates

Mr. Hall said that the commission would have had to increase rates immediately regardless of the provisions of section 15-a. He denied the statements of advocates of the Capper bill that the commission had ordered state rates raised merely because they were lower than the interstate rates and without proof of specific discrimination. "We in no case," he said, "have regarded disparity alone as establishing either undue prejudice or unjust discrimination. If we had there would have been no occasion to hold any hearings. The disparity was obvious, but we proceeded to investigate each case in the same method that was followed in the Shreveport case. We received detailed evidence to show that the interstate rate was reasonable and in case of some particular rates we reserved our decision because we were not fully convinced that the interstate rate was a reasonable criterion for the intrastate rate. We found that the maintenance of the lower intrastate rate resulted in a manifest and unjust discrimination against interstate commerce and then we had to consider whether the surrounding circumstances and conditions were the same. We found that they were substantially the same. We took the same steps as were taken in the Shreveport case and found not only a difference in rates but unjust discrimination against persons and localities.

"There then remained the question as to how the discrimination should be removed. In the Shreveport case we did not have power to prescribe the intrastate rate. We required the carrier to maintain no higher rates for intrastate traffic than for interstate traffic. But here we followed section 13, paragraph 4, and prescribed the rate to be charged. That gave a short cut to the same result that was effected in the Shreveport case under the old law. The new law is the Shreveport doctrine pure and simple, modified only as to form. The effect was precisely the same."

Mr. Hall also defended the provisions of the Transportation Act which provide for making rates by groups, saying that experience has demonstrated that in large rate cases it

is necessary to consider the carriers in groups because different rates cannot be made for separate lines serving the same communities. "Congress has merely given a legislative sanction," he said, "to what has long been the usage."

Mr. Hall pointed out that only four states, except those that were controlled by state fare laws, had not adopted the increase in passenger fares as prescribed by the Interstate Commerce Commission and only three of the states declined to authorize any increases at all. He denied the repeated statements that had been made that the action of the federal commission had "frozen" the intrastate rate structure in 24 states. At the outside, he said, statements that state rates had been "frozen" could be true only of 13 or 14 states and then only as to particular rates, and the commission's order provided specifically that readjustments could be made in such a way that they did not result in discriminations against interstate commerce, and thousands of such readjustments have been made. He also said he did not recall a case where a state commission has applied to the Interstate Commerce Commission for a modification of the order, except that Kansas asked for a modification as to certain features of the law. Instead they have elected to go to the courts. The commission had received copies of a resolution adopted by the Chamber of Commerce of Aberdeen, S. D., protesting because state rates could not be changed except by order of the Interstate Commerce Commission but, Mr. Hall said, the commission had not made any order whatever as to South Dakota.

He said there is great misunderstanding on that point and in the states where there was no necessity for an order by the Interstate Commerce Commission there is nothing to prevent the state authorities from changing local rates. This question has been so grossly exaggerated, Mr. Hall said, that it is difficult to speak of it with moderation. He also referred to the reductions in hay and grain rates in the west, pointing out that corresponding reductions are being made in the intrastate rates without the necessity of any order by the federal commission. The commission's orders all contain a paragraph pointing out that the orders are without prejudice to any request for a modification in instances where the intrastate rate is not related to the interstate rate and Mr. Hall said that practically there have been no applications for such modification. The commission hopes soon to be able to vacate all of its orders and to put all the states in the same condition as California and other states that "followed suit" when the federal commission raised the interstate rates and thereby retained control of local adjustments.

Majority of Shippers Satisfied With Law

"I believe that the law is functioning," he said, "to the satisfaction of the majority of the shippers of the country and also to the satisfaction of a majority of the state commissions, because most of them have not been interfered with. Some have joined in complaining of our action, but it is largely in the nature of a sympathetic strike for the good of the order."

Senator Cummins referred to the frequent statements that if rates were reduced the net income of the carriers would be increased by reason of increased traffic. Mr. Hall said that is being constantly said and the commission is always open to proof on that point. The commission is now conducting a general rate investigation which will go into that subject. Mr. Hall said that the commission's orders in Ex Parte 74 and the state rate cases are a sufficient answer to all the complaints that have been made before the committee. However, the record in Ex Parte 74 is not before the Supreme Court in the Wisconsin case. In reply to Senator Pomerene, Mr. Hall said that the same questions which have been raised since the rate advance would undoubtedly have been raised if the Transportation Act had contained no new rate-making provisions and he agreed with Senator Cummins, who remarked that much of the difficulty grew out of necessity for making rate changes in a wholesale way after the war.

Section 15-a Needed to Encourage Investment

Commissioner Esch said he wished merely to remark that Section 15-a was put into the law largely for the purpose of encouraging investment in railroad securities and that he still believes that the section has a function to perform and that its repeal would have an unfortunate effect. Senator Cummins remarked that if it had not been put into the law he believed half of the railroads would now be in the hands of receivers. Senator Pomerene said it is amazing that shippers are so ready to attribute all their ills from any cause to the fact that the law contained a definition of a fair return.

"Based on Public Interest"

Commissioner Campbell said that he was expressing his views as an individual rather than as a member of the commission and he read from notes that he had taken for the purpose of a speech giving his views as to how the law would affect the interests of shippers before he became a member of the commission. "I believe," he said, "that the Transportation Act is the most progressive piece of transportation legislation ever put on the statute books. It recognizes that transportation is a governmental function and that it is the duty of the government to see that proper and adequate transportation is furnished. It is based upon the public interest from beginning to end and it would be the gravest mistake to tamper with it in any way until it has been given a fair trial. The primary object was to stabilize railroad securities and restore the confidence of the investing public in the securities of the railroads. The law enacts into statutory form what the courts have invariably held, that the carriers are entitled to a fair return."

He added that he thought that the time has come when there should be co-ordination of rail and water facilities so that neither form of transportation should be allowed to force the other out of business. This can only be done, he said, by giving to the Interstate Commerce Commission control of water carriers similar to its control of rail carriers. "We are going to wake up some morning," he said, "to find that transportation is clogged and we will need both rail and water facilities."

Mr. Campbell said that he may differ from Congress somewhat in regard to the value of competition because competition and control by the government cannot consistently go hand in hand. It can only mean the survival of the fittest, but all transportation facilities which are serving the public must be allowed to survive and prosper because they are all necessary.

While the Capper bill and the Nicholson bill have been the ones most frequently referred to during the hearings, various modifications of these bills have also been suggested by representatives of the state commissions. Senator Capper has stated on the floor of the Senate that his bill was drafted by Chairman Reed of the Kansas Public Utilities Commission and John E. Benton, solicitor for the National Association of Railway and Utilities Commissioners.

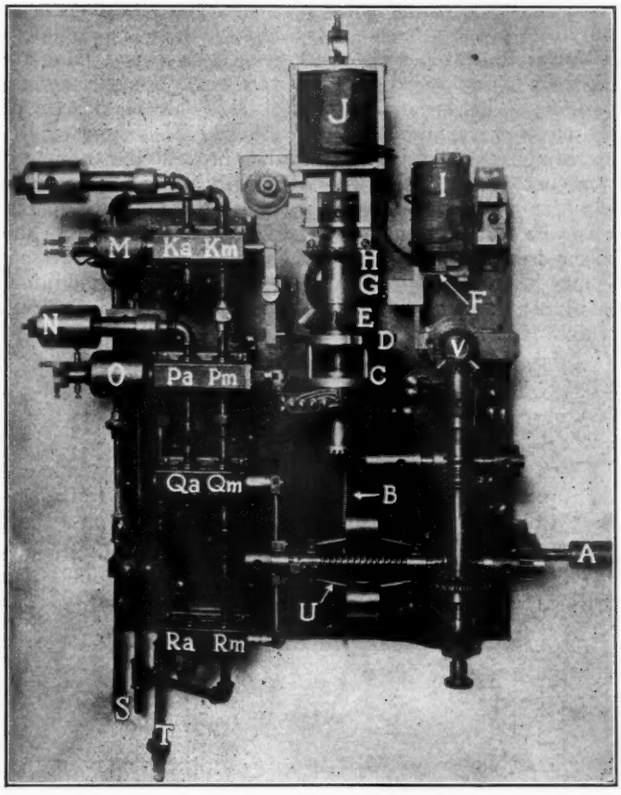
REPORTS OF AUTOISTS running into the sides of trains, breaking down crossing gates and running down crossing flagmen come to one's attention constantly, but one does not often hear of railroad tracks being used for a highway. However, the Southern Pacific reports that at Barnard, Cal., two machines occupied by 8 people turned off the county road at a crossing because of snow and started down the tracks, which had been cleaned by a snow plow. One of the machines stuck in a frog and the other slipped from the ties to one side when the Shasta Limited came along, the engineer stopping the train only two car lengths from the first machine.

"M-V All Weather" Train Control on Raritan River

Induction Apparatus with Limited Speed Control Exhibited Near South Amboy, New Jersey

NEAR PARLIN, N. J., four miles west of South Amboy, on the Raritan River Railroad, on December 15, the M-V All Weather Train Controller Company, of Newark, N. J., gave an exhibition of its automatic train control before four or five hundred spectators, the party having been taken to Parlin in a special train over the Central of New Jersey and the Raritan River. A locomotive and five coaches were used and five tests were carried out satisfactorily.

This device is of the induction type with no contact between the locomotive apparatus and the roadway, and no moving parts in the roadway member. The valves controlling the setting of the brakes of the train are automatically opened at the approach to each block section, and the brakes are set, unless the valves are held closed, at that point, by what is equivalent to a proceed indication conveyed by induction from the roadway element. This periodical operation of the brake apparatus is accomplished by means of a cam which is revolved, slowly, by gearing actuated through a suitable connection to one of the front truck wheels of the locomotive. The scheme involves the division of the line of road into block sections of equal length, the gearing connecting the truck wheels and the cam or cams being so proportioned that the cam, in its revolution, will have reached its brake-setting position when the locomotive has reached the point on the road where it is desired that the brakes should be applied. If there is no reason for stopping, or for slackening speed, the cam, by the influence of a magnet controlled from the roadway, is released, and before causing a brake application is reset at its starting point, to begin a new revolution, preparatory to causing a stop (if a stop shall be required) at the next point.

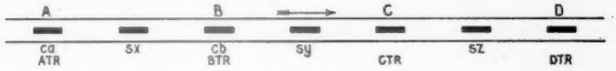


Brake-Setting Apparatus—M-V All-Weather Train Control System

The air valves, controlling magnets and centrifugal governor (by which latter the speed of the train is made to control the setting of the brakes) are contained in a box fixed on the front of the locomotive and the half-tone illustration is a front view of these parts, the front cover of the box being off.

The collecting coil on the train is hung about 9 in above the level of the top of the rails, being supported on a longitudinal beam beneath the center of the tender. The track magnet is placed midway between the running rails, and the top of the box containing it is flush with the tops of the ties. The arrangement of the magnets of successive sections is shown below.

The scheme contemplates the use of blocks of a length which (including a suitable margin of safety) will correspond to the braking distance for the fastest trains; and the brakes of such trains, for stopping at the entrance of block B C will be applied at A (see diagram). Assuming the presence of a train in section B C, the track relay at B, being open, holds open the wire circuit which energizes the track magnets at sx and at ca. A following train, if moving at more than 30 miles an hour, has its brakes applied at A;



and at sx, if block B C is still occupied, another application of the brakes is made, to bring the train to a stop before it reaches B. The second brake-applying point (sx) is fixed at a sufficient braking distance short of B to stop trains traveling at restricted speed (30 miles an hour). Further details are not made public at this time; but Dr. Charles W. Burrows, consulting engineer of the controller company, has favored us with the description, given below, of the valve-actuating apparatus by means of which the train brakes are set.

The track equipment, taking, for example, block B C, consists of the caution magnet ca, the stop magnet sx, the track circuit relay at B, the track circuit relay at A, and the power line. The roadway circuit which energizes ca and sx (in series) includes these two track magnets, the back contact of the track circuit relay at A, and the front contact of the track circuit relay at B. Each track magnet is virtually the primary of a transformer. This circuit is normally open, due to the fact that the track circuit relay at A is normally closed. When this is opened by the approaching train and that at B is closed (no train in block B C) the track magnets are both energized, preventing the application of brakes.

If a train passing A finds the track magnet at that point (ca) dead, the fact indicates that there is a train in block B C; no magnetic impulse being received from the roadway, the cam causes the application of the brakes until the speed is reduced to the restricted rate (30 miles an hour). If the second magnet (sx) is dead (block B C being still occupied) the valve to cause a full stop is opened. To stop a train the track magnets must be dead; and to allow

it to proceed—to prevent the setting of the brakes—must be energized.

The electromagnets on the roadway are of the horseshoe type, consisting of two cores arranged vertically, and a yoke of laminated silicon steel. This yoke is about 30 in. long and of 2 in. x 2 in. section. The vertical members are about 8 in. x 8 in. The magnetizing coils, surrounding the cores, are energized by a 60-cycle alternating current. A magnet consumes, when operating, 30 watts.

The locomotive collecting coil is fixed on a bar of laminated steel fastened under the tender, and it constitutes the secondary of a transformer, the winding of the roadway element being the primary.

In the photographic illustration of the cab mechanism, A is the connection to the wheels of the locomotive and U is the centrifugal governor operating the two sets of valves, Qa-Qm and Ra-Rm. The continuously rotating element is indicated by V at the top of the vertical shaft at the right. The armature of the relay is indicated by F, shown resting against the detent of the lever; and the magnetizing solenoid is indicated by I; this is in series with the coil beneath the tender. The clutch member and the rotating switch are directly behind the miter gear V. The two cams, C and D, are driven, as shown, through a train of gears.

At the top of the picture is shown the cam-resetting magnet J; this is energized from a storage battery, the current of which is controlled by relay I; and when energized pulls up its armature, and with it the miter gear H. This gear rotates continuously whenever the locomotive is in motion, and is free to slide upon its shaft. Normally, H engages the gear G which in turn drives the gear E. This latter is rigidly attached to both cams so that whenever the gears are in the position shown and the locomotive is in motion, the cams are rotated.

When the magnet disengages H from G, the cams cease to revolve and the spring B restores them to normal position. In this position the cam system remains at rest until the re-setting magnet is de-energized and the gear H again engages G.

On the left of the photograph are four pairs of air valves, Ra-Rm; Qa-Qm; Pa-Pm and Ka-Km. Each controls two passages; one, designated by *a* is between the atmosphere and the engineer's valve reservoir (through the pipe T); the other *m*, connects the two sides of a differential air valve (through the two pipes S). The action of this differential air valve is such that the equalization of the pressure in the pipes shuts off communication between the main reservoir and the engineer's brake valve.

The valves Ra-Rm, Qa-Qm are for speed control only and are actuated by the governor U. The valve Ra-Rm is to prevent the maximum allowable speed being exceeded. The centrifugal governor pulls the valve stem to the right, opening pipe T to the atmosphere, making a reduction of pressure in the engineer's brake valve reservoir. Valve Rm connects pipes S, cutting off connection between the main reservoir and the train line. This valve is controlled entirely by the speed of the locomotive.

The valve Ka-Km is controlled by the cam D, as shown. The air passage at the left (Ka) opens into the atmosphere through the reducing valve L, thus connecting the engineer's brake-valve reservoir and the atmosphere, through the pipe T. The opening at the right (Km) connects the two pipes S and disconnects the main reservoir.

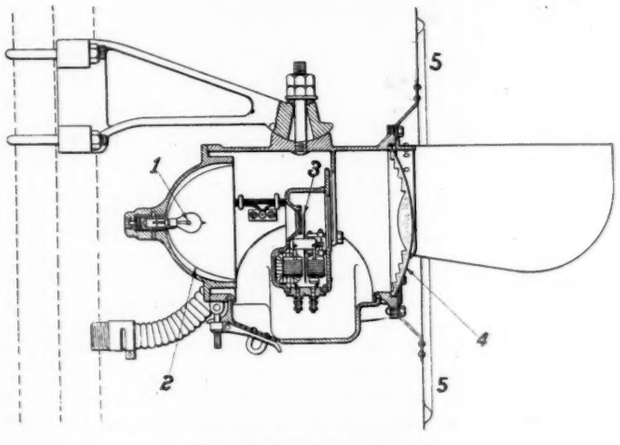
A similarity between the action of the valves Ra-Rm and Ka-Km is obvious. The former is controlled by the rate of speed and the latter by the distance of travel of the locomotive, and each one is independent of the other. While the other two valves have functions similar to those just described, they differ in this important respect—the application of the air brakes requires the co-operative functioning of both valves. Valve Qa-Qm is operated by the centrifugal governor, moving at lower speed than when it operates Ra-Rm. Valve Pa-Pm is operated by the distance of travel of the train but by a shorter distance than is required for Ka-Km. When the centrifugal governor has caused the ports of Qa-Qm to open, connection is made with the corresponding ports of Pa-Pm. If the ports of this valve are closed there is no resultant action on the brake. Valve Pa-Pm through the motion of cam C is open after the train has traversed the prescribed distance. The opening of the passage Pa of this valve connects the atmosphere, through the reducing valve N, to Qa. Consequently, it requires the co-operative action of these two valves to open up a continuous passage between pipe T and the atmosphere. Pm opens a passageway between the pipes S only when Qm is open.

The lower valve is entirely independent of all the other valves and has for its sole function the prevention of excessive speed. The upper valve is entirely independent of all other valves and when operated produces an absolute stop. The co-operating action of the other two valves permits a train to proceed, but at restricted speed.

Valves Pa-Pm and Ka-Km having been opened, there are no mechanical means for restoring them to their normal position. This is accomplished through the energization of the electromagnets M and O. Magnet M restores to its normal position the valve which has brought the train to a stop, but such a full stop will not occur if the engineer has been alert; and the key for closing this circuit is placed where he must descend to the ground to operate it. In the solenoid controlling the other valve, conditions are different; O may be energized from the inside of the cab. In addition, this latter magnet is always operated automatically whenever relay I is energized from the roadway.

The Hall Color-Light Signal

THE RARITAN RIVER RAILROAD, in connection with experiments being conducted with automatic train control, has installed automatic block signaling on a short section of its line, about four miles west of South Amboy, and uses for the visual indication the color-light signal recently brought out by the Hall Switch & Signal Company. This signal, designed to give both day and night indications, consists of a single light, with a reflector; and three indications—red, yellow and green—are given by means of a moveable roundel which is brought into the proper position



Hall Color-Light Signal

for focusing the light on the roundel in accordance with the action of the controlling track relay.

As shown in the illustration, the electric bulb is mounted in the elliptical reflector, 2, the filament being so located as to concentrate the rays of the light on the colored roundel, 3; and these rays diverge again to fill the clear glass lens, 4. The colored roundels, which are one-sixteenth inch thick and one inch in diameter, are fixed in the vane of the operating mechanism. When the actuating relay is energized by current in one direction, the vane swings up and gives the green indication; when energized in the other direction, the vane swings down, showing yellow. In the neutral position (no current flowing) it shows red; and, of course, red would be displayed if the power should fail. The time required for a movement from yellow to green is less than one-sixteenth of a second. The lens, of the Fresnel type, is 10½ inches in diameter.

For long range indications, the lamp is a 10-watt, Argon gas-filled bulb.

The lamp has two filaments looped one within the other, with which arrangement the light will continue to glow notwithstanding the burning out of the main filament.

The lamp has a hood extending in front, as shown, and also a circular disk, indicated by 5, 5, painted black, which serves as a daytime background. A polyphase vane relay movement is employed, but d c relays can be used, the member carrying the roundels being directly connected to a simple iron armature. The armature and its counterweight are the only moving parts.

THIRTY CARLOADS of "cars"—automobiles—were moved recently in a solid train from the plant of the Durant Motor Company, Long Island City, New York, through Canada (over the Canadian Pacific) to the Pacific Coast.

Freight Car Loading

WASHINGTON, D. C.

APPROACH of the holidays resulted in a reduction in freight traffic during the week ended on December 24, according to reports compiled by the Car Service Division of the American Railway Association. These show that 665,927 cars were loaded with revenue freight during that week compared with 727,003 cars the week before, or a decrease of 61,076 cars. This was an increase, however, of 17,521 cars as compared with the corresponding week of 1920 which included Christmas Day but a reduction of 18,857 cars compared with the corresponding week in 1919.

Reductions, compared with the previous week, were reported in the loading of all commodities except coal, which totaled 135,852 cars or 1,010 cars more than the week before. Compared with the corresponding week last year, a decrease of 42,335 cars was reported.

Loading of grain and grain products amounted to 36,793 cars, 10,590 less than the week before but 7,539 more than during the same week in 1920 and 3,591 more than the same week in 1919. Livestock with 22,958 cars was 10,903 less than the previous week but 2,340 more than the corresponding week last year. It was, however, 4,804 cars less than were loaded during the corresponding week in 1919.

Coke totaled 7,140 cars, five less than the week before, while ore declined 46 cars to a total of 5,489. There were 45,518 cars loaded with forest products, 3,172 cars less than during the week before. This was, however, 7,000 cars more than were loaded during the same period in 1920 and 3,598 more than during the corresponding week in 1919.

Loadings of merchandise and miscellaneous freight, which includes manufactured products, totaled 412,177 cars. While this was 37,370 cars below the total for the week before it

REVENUE FREIGHT LOADED—WEEK ENDED SATURDAY, DECEMBER 17, 1921

District	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year, 1921	Corresponding year, 1920	Corresponding year, 1919
Eastern	1921	9,469	3,951	37,282	1,762	5,043	852	59,396	60,690	178,445	.....	.....
	1920	5,888	3,837	60,479	2,144	6,359	3,629	48,263	61,883	.....	192,482	198,836
Allegheny	1921	3,019	3,799	41,273	3,606	2,574	2,378	45,696	47,141	149,486	.....	.....
	1920	1,810	3,453	67,617	6,521	2,862	4,382	36,770	53,707	.....	177,122	168,678
Pocahontas	1921	251	92	14,794	159	1,331	24	5,453	3,174	25,278	.....	.....
	1920	104	116	21,720	758	1,593	136	4,692	2,696	.....	31,815	36,268
Southern	1921	4,211	2,152	16,423	454	18,338	605	38,023	35,412	115,618	.....	.....
	1920	2,805	1,800	32,545	1,002	14,930	2,102	33,110	36,670	.....	124,964	127,225
Northwestern	1921	13,598	9,678	6,137	841	9,824	308	25,708	23,535	89,629	.....	.....
	1920	11,043	8,701	8,876	1,409	9,424	1,204	24,658	26,446	.....	91,761	97,337
Central Western	1921	12,459	11,402	15,566	193	4,903	739	30,617	34,088	109,967	.....	.....
	1920	9,884	10,568	26,600	395	4,553	2,491	28,835	35,954	.....	119,280	118,979
Southwestern	1921	4,376	2,787	3,367	130	6,677	629	16,270	24,344	58,580	.....	.....
	1920	3,697	1,997	7,222	111	7,027	545	16,393	27,855	.....	64,847	59,411
Total all roads	1921	47,383	33,861	134,842	7,145	48,690	5,535	221,163	228,384	727,003	.....	.....
	1920	35,231	30,472	225,059	12,340	46,748	14,489	192,721	245,211	.....	802,271	.....
	1919	37,544	38,497	188,907	11,009	51,748	11,181	149,971	317,877	.....	.....	806,734

REVENUE FREIGHT LOADED—WEEK ENDED SATURDAY, DECEMBER 24, 1921

District	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year, 1921	Corresponding year, 1920	Corresponding year, 1919
Eastern	1921	8,278	2,305	33,528	1,587	4,491	1,221	57,873	53,561	162,844	.....	.....
	1920	4,905	2,682	49,112	1,608	5,623	1,253	41,689	52,899	.....	159,771	167,094
Allegheny	1921	2,611	2,351	38,522	3,653	2,542	2,037	43,319	41,933	136,968	.....	.....
	1920	1,674	2,787	52,390	5,603	2,883	1,984	33,961	43,865	.....	145,147	144,245
Pocahontas	1921	185	50	16,812	138	1,204	21	5,165	2,720	26,295	.....	.....
	1920	79	96	16,728	585	1,273	118	3,988	1,879	.....	24,746	22,327
Southern	1921	2,889	1,299	17,969	423	17,334	499	36,060	32,195	108,668	.....	.....
	1920	2,348	1,735	23,940	717	12,507	1,540	28,921	28,035	.....	99,843	106,618
Northwestern	1921	9,334	6,919	7,172	967	9,322	336	23,746	21,086	78,882	.....	.....
	1920	8,600	5,303	8,099	1,328	7,711	949	20,624	19,883	.....	72,497	87,337
Central Western	1921	9,770	8,354	18,223	240	4,137	710	29,387	27,039	97,860	.....	.....
	1920	8,611	6,907	22,737	315	3,448	2,182	24,516	27,618	.....	96,334	105,995
Southwestern	1921	3,726	1,680	3,626	132	6,488	665	15,379	22,714	54,410	.....	.....
	1920	3,037	1,108	5,181	90	5,065	468	13,040	22,079	.....	50,068	51,168
Total all roads	1921	36,793	22,958	135,852	7,140	45,518	5,489	210,929	201,248	665,927	.....	.....
	1920	29,254	20,618	178,187	10,246	38,510	8,594	166,739	196,258	.....	648,406	.....
	1919	33,202	27,762	165,876	8,836	41,920	9,326	131,423	266,439	.....	.....	684,784
Week ended:												
December 24	1921	36,793	22,958	135,852	7,140	45,518	5,489	210,929	201,248	665,927	648,406	684,784
December 17	1921	47,383	33,861	134,842	7,145	48,690	5,535	221,163	228,384	727,003	802,271	806,734
December 10	1921	48,680	32,159	137,836	6,638	49,744	6,128	225,718	236,023	742,926	837,953	761,940
December 3	1921	47,227	31,955	137,293	6,345	48,403	5,317	227,906	243,008	747,454	882,604	789,286
November 26	1921	35,081	25,866	137,432	6,307	43,843	5,541	200,000	219,757	673,827	803,701	739,197

was 49,180 cars more than were loaded during the corresponding week last year, which included Christmas, and 14,315 cars more than were loaded during the corresponding week in 1919.

Compared by districts, reductions in the loading of all commodities under the week before were reported by all except the Pocahontas, which showed a slight gain but, with the exception of the Allegheny district, all reported increases over the corresponding week last year.

The summaries for the weeks of December 17 and December 24 are given on the preceding page.

The car surplus continues to increase. For the period ending December 23 the total was 404,214 cars, classified: Box cars, 157,695; gondolas, 197,232, and miscellaneous cars, 49,287. The total increase of 32,993 cars is 8.9 per cent over the figure for the week ended December 15.

The bad order cars, however, showed a decrease during the period ending December 15 to 308,556 or 13.5 per cent, as compared with 14 per cent on December 1.

Invariably during a period of rapidly increasing surplus of freight cars, such as exists at present, there arises discussion of the relation of the car hire or per diem rate between railroads and the trend of empty mileage. The Car Service Division has given very careful consideration to this question and has reached the following conclusions.

1. That the per diem rate is a comparatively minor factor in the per cent of empty mileage.

2. That the per cent of empty mileage is influenced primarily by fluctuations in traffic.

3. That sudden decreases in traffic always result in an immediate increase in the per cent of empty mileage, which, however, may vary according to the changes in the relation of the tonnage moved of one class of traffic to another.

For the period ended December 23 the surplus increased to 470,516 cars, of which 191,707 were box cars and 221,614 were coal cars.

Senate Delays Confirmation of I. C. C. Appointments

WASHINGTON, D. C.

PRESIDENT HARDING'S recent action in reappointing Commissioners Aitchison and Hall to the Interstate Commerce Commission upon the expiration of their terms on December 31 has caused a row in the Senate because of protests by Southern senators on the ground that the South was not given additional representation on the commission; this may delay confirmation by the Senate for some time.

The failure of the Senate to confirm the appointments before the holiday recess left two vacancies in the commission on January 1 although the two men were retained by the commission temporarily as special examiners. They did not sit during the arguments in the valuation cases heard by the full commission on January 4, 5 and 6, although Mr. Hall testified on behalf of the commission before the Senate committee on interstate commerce on January 5 in the hearing on the Capper bill.

Action by the Senate was also postponed partly because of the absence of Senator La Follette, who had announced his intention of presenting a minority report dissenting from the action of the Committee on Interstate Commerce which had approved of the nominations. The delay in confirmation also prevented Mr. Aitchison and Mr. Hall from sitting at the hearings in the general rate investigation which were resumed on January 11. They, with Commissioners Esch and Lewis, had been designated by the commission to hear the testimony in that case before the reappointments of Commissioners Aitchison and Hall had been sent to the Senate by the President.

Opposition to Mr. Aitchison's reappointment was voiced by Senator Trammell of Florida in open session of the Senate on January 5, when he introduced a bill providing that members of the Interstate Commerce Commission shall be appointed from 10 different sections of the United States, with one at large, and that not more than one member shall be appointed from any one state. Mr. Trammell said he had been informed by a man connected with the lumber industry of the South that Mr. Aitchison, after encouraging a reduction in lumber rates from the Northwest made voluntarily by the railroads, had tried to influence the commission against deciding in favor of a reduction in hardwood lumber rates from the South in the case now pending before the commission which has not been decided.

Senator Trammell said he had introduced the bill because it does not seem to be the policy of the President to appoint the membership of the commission from different sections. He said the great Southern part of the country has no representation upon the commission, while the Northwest has had three representatives, Mr. Hall from Colorado, Mr. Aitchison from Oregon, and Mr. Campbell from Washington. Wisconsin has two members, Mr. Meyer and Mr. Esch, and New Jersey has two, Mr. Daniels and Mr. Cox. The senator said he did not mean that the members of the commission would not feel disposed to represent the United States in general, but that unquestionably in dealing with problems with which they are more familiar they are in a better position to pass upon them and make equitable adjustments than if they have only the information that is brought to them when the particular rate question is pending.

Senator Simmons asked if the states of Colorado, Oregon and Washington are not in the same classification territory, but Senator Cummins pointed out that the railroad problems are not centered around or confined by classification territory. For instance, the problems of the Pacific Coast, which are said to be represented by Mr. Aitchison, are entirely different from the problems of the intermountain country from which Mr. Campbell comes, while Mr. Hall may be said to be familiar with the problems arising in the territory east of the Rocky Mountains. He pointed out that Commissioner McChord of Kentucky comes from the Southern classification territory, but he agreed that that does not meet the suggestion made by the senator from North Carolina and the senator from Florida, because the country extending southeast along the Atlantic Ocean in which land transportation must meet the competition of ocean transportation, has its big problems as well. He thought it would not be amiss if there were some member of the commission from that country.

Senator Ransdell asked if he would not extend it to the Gulf and take in Louisiana, Mississippi and Texas, to which Senator Cummins replied that the same suggestions could be made about that territory, but he was simply trying to explain that the difference in problems is not represented by classification territories.

In charging Mr. Aitchison with discrimination in favor of the Northwest aganst the South, Senator Trammell declared that while Mr. Aitchison was heartily in sympathy with the railroads making a voluntary reduction of about 16 per cent in the rates on lumber from the West to the Central West and the East, when the question of a reduction from the Southern states was raised, "Mr. Aitchison, instead of trying to assist in bringing about a voluntary reduction or a forced reduction, if necessary, in freight rates, balked in every way possible, I am informed, the plan to secure a reduction in the rates upon lumber especially from the South."

Senator Cummins immediately asked whether the senator had before him the record of the case to which he referred. Senator Trammell said he did not understand that the case had been decided, but that the information had been given him by a man familiar with the case. He said that it was

understood that the railroads had promised that if the hardwood case resulted in a reduction they would make similar reductions in the rates on yellow pine from Southern territory. He said he had been informed that "a few days ago, with nine members of the commission present, with five members probably against reducing the rates on hardwood lumber from Southern territory, Mr. Aitchison, who was against the rate reduction, attempted to force a decision in the case."

Senator McNary of Oregon rose to the defense of Mr. Aitchison, saying he believed it is unfair for any one to affirm he has not acted fairly and justly toward all sections and pointing out that for Western lumber the railroads came into competition with water carriers. Senator Overman of North Carolina said he knew of no reason why Mr. Aitchison should not be confirmed, but if what the Senator from Florida says is true, he ought not to be confirmed. He said he had held up the appointments before the holidays as a protest because the great Southern territory had been absolutely ignored, not only by President Harding, but by President Wilson. He said the South had had no representative since the death of Judge Clements and that he had heard that when a question of rates on cotton recently came before the commission it developed there was not a member who knew what lint cotton was.

Senator Fletcher of Florida also joined in the debate and asked if the hardwood case has not been pending for some time and if the whole question of reducing the rates on yellow pine and other timber from the South is not dependent upon the decision in the hardwood case in which Mr. Aitchison was said to have opposed a reduction. Senator Cummins pointed out that there is no competition between the West and the South on hardwood and said it seemed to him to be very far-fetched to charge that because Mr. Aitchison may be opposed to a reduction in the rates on hardwood, he is doing the South an injustice. "I do not know that he is," he said. "I think that one ought to be pretty careful with respect to his facts before he makes a charge that an officer holding the position Mr. Aitchison does, is consciously influenced because of the interest he may have in the locality from which he comes."

The matter was considered in executive session later in the day, but no action was taken.

I. C. C. Proposes to Order Automatic Train Control

49 Roads Ordered to Show Cause Why Installation Should Not Be Required by July 1, 1924—Specifications

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION on January 10 served upon 49 railroads an order to show cause by March 15 why it should not adopt a report and enter an order requiring them to install by July 1, 1924, between designated points in their main lines, automatic train stop or train control devices complying with specifications and requirements set forth in the order which the commission has determined upon as the result of its investigation conducted pursuant to section 26 of the interstate commerce act.

The device, according to the proposed order, is to be applicable to or operated in connection with all road engines running on or over at least one full passenger locomotive division included in the part of the main line between the points named. It further provides that each carrier named shall submit to the commission complete and detailed plans and specifications prior to the installation and that by July 1, 1922, they shall file complete and detailed plans of the signal systems in use and a report of the number and type of locomotives assigned to or engaged in road service on the designated portions of line and shall proceed diligently and without unnecessary delay to select and install the devices as specified. They are also to file with the commission on or before July 1, and each three months thereafter full and complete reports of the progress made with the preparation for and the installation of the devices, which together with the manner and details of the installation shall be subject to the approval of the commission or the division of the commission to which the matter may be referred.

Report of the Commission

The report of the commission says:

This is a proceeding initiated by us under Section 26 of the interstate commerce act under which we are authorized after investigation to order any carrier by railway subject to the act to install automatic train-stop or train control devices or other safety devices.

Under Public Resolution No. 46, approved June 30, 1906, the Congress directed us to investigate and report on the use of and necessity for block signals for automatic control of railway trains in the United States. The sundry civil appropriation act, approved May 26, 1908, contained a provision directed to the same end and appropriated some fifty thousand dollars for the purpose. Under the above resolution the Block Signal and Train Control Board was created and was employed by the commission from 1907 to 1912 to study the subject and to investigate numerous automatic train-stop and train-control devices presented by various designers and patentees. Reports of these investigations have been made to us with recommendation as to specifications and requirements. Since 1912 the commission's Bureau of Safety has continued these investigations. Under the United States Railroad Administration investigations were made by a special Automatic Train-Control Committee and further specifications and requirements were recommended. The records and files of this committee have been transferred to this commission.

Investigation Has Proved Worth

The conclusions arrived at as a result of these several investigations conducted from 1906 to 1920, were identical in substance, namely, that automatic control of trains is practicable; that the use of automatic train control devices is desirable as a means of increasing safety and that the development of automatic train-control devices had reached a stage warranting installation and use of such devices on a more extended scale. The results of these investigations and the conclusions thereon were published from time to time and attracted widespread attention commensurate with the importance of the subject. The successive investigations with their satisfactory results, and the recognized obvious need for some such device resulted in the inclusion in the transportation act of 1920 of a section which places upon us the duty after investigation of ordering the installation by the carriers, in locations designated by us, of automatic train-stop or automatic train-control devices which comply with prescribed specifications and requirements.

Since that section was passed we have been urged to require the installation of various automatic train-control devices. We were not disposed, however, to issue an order requiring the installation by any carrier of any such device without further investigation and a review of past investigation and performances together with a thorough check under our own supervision of the actual performances of these devices as installed and in operation.

To that end and in order to carry out the provisions of Section 26 in the most effective and expeditious manner, we invited the co-operation of the American Railway Association. A joint committee on automatic train control consisting of representatives of the signal section and the operating, engineer and mechanical divisions of that association was appointed in November, 1920.

The joint committee has been engaged in connection with our Bureau of Safety, since November, 1920, in studying the perform-

ances of train-control devices under varying service conditions and has rendered us valuable aid. We have had the advantage of the specifications and requirements developed from these practical demonstrations.

Record has been kept by our Bureau of Safety of service operations on portions of the lines of the Chesapeake & Ohio, the Chicago, Rock Island & Pacific, and the Chicago & Eastern Illinois railroad companies, equipped with different automatic train-stop and train-control devices, each of which shows a high degree of efficiency. Data have been gathered upon the effect of the devices upon railroad operating conditions, upon problems of installation and maintenance on an extended scale, upon installation, operating and maintenance costs and upon the revisions made or required in the several devices.

Savings From Safety

The matter of cost is the basis upon which the carriers have raised objection to an order requiring the installation of automatic stop or train-control devices. Like objection has been made to the installation of all other safety devices which are now in use and which have long since demonstrated their practicability and necessity. This objection has been raised in prosperous as well as in non-prosperous years. Yet the compensation from a financial standpoint, which will result from the securing added safety in train operations should not be overlooked. In the hearings before the Committee on Interstate and Foreign Commerce when Section 26 was under consideration certain statistics gleaned from our accident reports were presented showing that from 1909 to 1917, both inclusive, there were 13,339 head-on and rear-end collisions resulting in damage to railroad property alone of over nineteen million dollars. These collisions resulted in death to 2,454 persons and injury to 37,724. In other words, the annual average of these collisions amounted to 1,482, the average number of killed to 272, and of injured to 4,191. During the two and one-half years from January 1, 1918, to June 30, 1920, inclusive, there were 3,226 such collisions, resulting in the deaths of 635 persons and injury to 6,240. The damage to railroad property amounted to over seven million dollars. If to the large property loss there be added the death losses and the damages paid for persons injured the total rises to enormous figures. If these vast sums which represent total losses to the carriers had been expended in the installation of block signal systems or automatic train-stop or train-control devices many thousands of miles of road could have been equipped.

In the report of the chief of the Bureau of Safety for the fiscal year ended June 30, 1921, it is shown that during the fiscal year 97 train accidents were investigated consisting of 62 collisions and 35 derailments. The collisions resulted in the death of 194 persons and the injury of 849 persons. The derailments resulted in the death of 77 persons and the injury of 518 persons, a total of 271 killed and 1,367 injured. Twenty-six of the collisions occurred on lines operated by the block signal and of these 17 occurred where automatic signals were used. Of the 17, 8 were rear-end collisions, 4 were head-end collisions, and 3 were side collisions. Of these 17 collisions occurring in block signal territory there were 13 cases in which enginemen, pilots or motormen failed properly to observe or obey signal indications. These undoubtedly would have been prevented had an adequate automatic train control system been in use.

Recent Accidents

Since the above report was made several accidents resulting in large loss of life and property have occurred. A rear-end collision between two passenger trains on the Pennsylvania Railroad near Manhattan Transfer, New Jersey, in which 46 persons were injured could doubtless have been prevented had the automatic train control system in use from the Pennsylvania Terminal, New York City, to the Hackensack River been extended to the Manhattan Transfer, a distance of some two miles. In December, 1921, a wreck occurred on the Philadelphia & Reading road a few miles out of Philadelphia, resulting in the death of 23 persons and injury to many others. Had there been an adequate automatic train-control device on that road this wreck would not have occurred.

Our investigations have shown that automatic train control has long since passed the experimental stage. In fact, no safety devices, such as the automatic coupler, the air brake and the automatic block signal, were perfected to as high a degree as the automatic train control before they were either ordered installed or were voluntarily adopted.

Practicable and Necessary

The fourteen years of investigation and study, the service tests under varying conditions and the results obtained in the actual employment of these devices over periods of years upon some of the roads have clearly demonstrated the practicability of and the necessity for automatic train-stop or train-control. The time has now arrived when the carriers should be required to select and install such device or devices as will meet our specifications and requirements. Under the act our order cannot be made effective before the expiration of two years from the date thereof. The fixing of a time limit must be based upon a consideration of the time which has already run since the passage of the act, and the progress and present state of automatic train control. There must be considered also the time reasonably required to enable the carriers to select suitable devices from among those available, to develop them and to meet their operating conditions and requirements in the designated locations and to provide for the manufacture and installation of the apparatus.

The definitions, functions, requirements and specifications which we have adopted are set forth in the appendix. They are based upon the facts developed in our investigations and upon the requisites laid down by the Block Signal and Train Control Board report in 1912, the requisites of the Railroad Signal Association adopted in 1914, and those of the Automatic Train Control Committee of the United States Railroad Administration in 1919, together with the definitions and functions reported by the Joint Committee on Train Control of the American Railway Association in March, 1921.

The railroads hereinafter designated which are required to install upon the designated portions of their roads, automatic train control devices in accordance with our specifications and requirements, have been selected with regard to the measure of the risk of accident in connection with traffic conditions thereon.

We have decided not to limit by our order the installation of these devices to roads or parts of roads already equipped with automatic block signals, because we have no desire to discourage efforts for automatically controlling trains without the aid of the fixed wayside signals. The statement, therefore, as to the primary function of automatic train-stop or train-control devices recognizes the possibility of establishing such a device without the use of automatic block signals in conjunction therewith.

The Roads Affected

The list of railroads to which the order was issued and the parts of their lines designated is as follows:

Atchison, Topeka & Santa Fe, between Chicago and Newton, Kan.
Atlantic Coast Line, between Richmond, Va., and Charleston, S. C.
Baltimore & Ohio, between Baltimore and Pittsburgh.
Boston & Albany, between Boston and Albany.
Boston & Maine, between Boston and Portland, Me.
Buffalo, Rochester & Pittsburgh, between Rochester and Butler, Pa.
Central Railroad of New Jersey, between Jersey City and Scranton.
Chesapeake & Ohio, between Richmond, Va., and Clifton Forge, Va.
Chicago & Alton, between Chicago and Springfield, Ill.
Chicago & Eastern Illinois, between Chicago and Danville, Ill.
Chicago & Erie, between Chicago and Salamanca, N. Y.
Chicago & North Western, between Chicago and Omaha.
Chicago, Burlington & Quincy, between Chicago and Omaha.
Chicago, Indianapolis & Louisville, between Chicago and Louisville, Ky.
Chicago, Milwaukee & St. Paul, between Chicago and St. Paul.
Chicago, Rock Island & Pacific, between Chicago and Rock Island, Ill.
Chicago, St. Paul, Minneapolis & Omaha, between Minneapolis and Omaha.
Cincinnati, New Orleans & Texas Pacific, between Cincinnati and Knoxville, Tenn.
Cleveland, Cincinnati, Chicago & St. Louis, between Cleveland and St. Louis.
Delaware & Hudson Company, between Wilkes-Barre, Pa., and Albany.
Delaware, Lackawanna & Western, between Hoboken and Buffalo.
Erie Railroad, between Jersey City and Buffalo.
Galveston, Harrisburg & San Antonio, between El Paso, Texas, and Houston.
Great Northern, between St. Paul and Minot, N. D.
Illinois Central, between Chicago and Memphis.
Kansas City Southern, between Kansas City and Texarkana, Texas.
Lehigh Valley, between Jersey City and Buffalo.
Long Island, between Jamaica and Montauk.
Louisville & Nashville, between Louisvile and Birmingham.
Michigan Central, between Chicago and Detroit.
Missouri Pacific, between St. Louis and Kansas City.
New York Central, between Albany and Cleveland.
New York, Chicago & St. Louis, between Chicago and Cleveland.
New York, New Haven & Hartford, between New York and Providence, R. I.
Norfolk & Western, between Roanoke, Va., and Columbus, Ohio.
Northern Pacific, between St. Paul and Mandan, N. D.
Oregon-Washington Railroad & Navigation Company, between Portland and Pendleton.
Pennsylvania Railroad, between Philadelphia and Pittsburgh.
Pere Marquette, between Grand Rapids and Detroit.
Philadelphia & Reading, between Philadelphia and Harrisburg.
Pittsburgh & Lake Erie, between Pittsburgh and Youngstown, Ohio.
Pittsburgh, Cincinnati, Chicago & St. Louis, between Pittsburgh and Indianapolis.
Richmond, Fredericksburg & Potomac, between Washington and Richmond, Va.
St. Louis & San Francisco, between St. Louis and Springfield, Mo.
Southern Pacific Company, between Oakland and Sacramento.
Southern Railway Company, between Washington and Atlanta, Ga.
Union Pacific, between Omaha and Cheyenne.
West Jersey & Seashore, between Philadelphia and Atlantic City.
Western Maryland, between Baltimore and Cumberland, Md.

Specifications and Requirements for Automatic Train-Stop or Train-Control Devices

The definitions, functions, requirements and specifications governing the installation and operation of automatic train-stop or train-control devices prescribed are given in the appendix as follows:

Purpose.

The purpose of this general specification is to define automatic train-stop or train-control devices and to outline essential features involved in their design, construction and installation on railroads.

Definition of Automatic Train-stop or Train-control Devices.

A system or installation so arranged that its operation will automatically result in either one or the other or both of the following conditions:

First—Automatic Train-stop—The application of the brakes until the train has been brought to a stop.

Second—Automatic Speed Control—The application of the brakes when the speed of the train exceeds a prescribed rate and continued until the speed has been reduced to a predetermined and prescribed rate.

Functions.

In prevailing practice the primary function of automatic train-stop or train-control devices is to enforce obedience to the indications of fixed signals; but the feasible operation of essentially similar devices used without working wayside signals may be regarded as a possibility. The following features may be included, separately or in combination, in automatic train-stop or train-control systems:

1. Automatic Train-Stop.
   Without manual control by the engineman, requiring the train to be stopped; after which the apparatus may be restored to normal condition manually and the train permitted to proceed.
2. Automatic Train Control or Speed Control.
   (a) Automatic stop, after which a train may proceed under low-speed restriction until the apparatus is automatically restored to normal or clear condition by reason of the removal of the condition which caused the stop operation.
   (b) Low-speed restriction, automatic brake application under control of the engineman who may, if alert, forestall application at a stop indication point or when entering a danger zone and proceed under the prescribed speed limit, until the apparatus is automatically restored to normal or clear condition by reason of the removal of the condition which caused the low-speed restriction.
   (c) Medium-speed restriction, requiring the speed of a train to be below a prescribed rate when passing a caution signal or when approaching a stop signal or a danger zone in order to forestall an automatic brake application.
   (d) Maximum-speed restriction, providing for an automatic brake application if the prescribed maximum speed limit is exceeded at any point.

General Requirements.

1. An automatic train-stop device shall be effective when the signal admitting the train to the block indicates stop, and so far as possible when that signal fails to indicate existing danger conditions.
2. An automatic train-control or speed-control device shall be effective when the train is not being properly controlled by the engineman.
3. An automatic train-stop, train-control or speed-control device shall be operative at braking distance from the stop signal location if signals are not overlapped, or at the stop signal location if an adequate overlap is provided.

Design and Construction.

1. The automatic train-stop or train-control device shall meet the conditions set forth under general requirements applicable to each installation.
2. The apparatus shall be so constructed as to operate in connection with a system of fixed block or interlocking signals, if conditions so require, and so inter-connected with the fixed signal system as to perform its intended function;
   (a) In event of failure of the engineman to obey the signal indications; and
   (b) So far as possible, when the signal fails to indicate a condition requiring an application of the brakes.
3. The apparatus shall be so constructed that it will, so far as possible, perform its intended function if an essential part fails or is removed, or a break, cross or ground occurs in electric circuits, or in case of a failure of energy.
4. The apparatus shall be so constructed as to make indications of the fixed signal depend, so far as possible, upon the operation of the track element of the train-control device.
5. The apparatus shall be so constructed that proper operative relation between the parts along the roadway and the parts on the train will be assured under all conditions of speed, weather, wear, oscillation and shock.
6. The apparatus shall be so constructed as to prevent the release of the brakes after automatic application until the train has been brought to a stop, or its speed has been reduced to a predetermined rate, or the obstruction or other condition that caused the brake application has been removed.
7. The train apparatus shall be so constructed that, when operated, it will make an application of the brakes sufficient to stop the train or control its speed.
8. The apparatus shall be so constructed as not to interfere with the application of the brakes by the engineman's brake valve or to impair the efficiency of the air brake system.
9. The apparatus shall be so constructed that it may be applied so as to be operative when the engine is running forward or backward.
10. The apparatus shall be so constructed that when two or more engines are coupled together, or a pushing or helping engine is used, it can be made operative only on the engine from which the brakes are controlled.
11. The apparatus shall be so constructed that it will operate under all weather conditions which permit train movements.
12. The apparatus shall be so constructed as to conform to established clearances for equipment and structures.
13. The apparatus shall be so constructed and installed that it will not constitute a source of danger to trainmen, other employees or passengers.
14. The apparatus shall be so constructed, installed and maintained as to be safe and suitable for service. The quality of materials and workmanship shall conform to this requirement.

Railroads Reducing Their Debt to the Government

WASHINGTON, D. C.

THAT THE RAILROADS are beginning to make some headway in reducing their indebtedness to the federal government, incurred during the war period and in connection with the transition from federal control to private management, is indicated by recent reports by various branches of the government.

A statement issued by the Treasury Department on January 3 shows that while a total of $270,740,217 had been loaned to 72 companies from the revolving fund of $300,000,000 created by Section 210 of the Transportation act, on certificates issued by the Interstate Commerce Commission, 17 of the railroads had made repayments amounting to $32,423,360.65. Of the $300,000,000 fund, $40,000,000 was served by the commission for claims, judgments, etc., against the Railroad Administration arising out of federal control, but the fund has been considerably increased by interest payments by the roads which received loans, and by repayments. Under the law the time within which applications for loans may be made is limited to February 28, 1922.

The annual report of the War Finance Corporation also shows that of $204,794,520 loaned to railroads since April 5, 1918, all but $26,733,210 had been repaid. According to a report by the director general of railroads to the Senate (as of December 1) the railroads still owed the Railroad Administration $507,628,508 on account of the $1,144,000,000 of capital improvements made by the government while it was in control of the railroad properties, the balance having been taken care of partly in cash and partly in railroad securities which are gradually being

sold by the Railroad Administration to private investors. The sale of these securities has provided the Railroad Administration with funds with which to settle gradually its indebtedness to the railroads, amounting to $750,670,588 on December 1, as the balance of the rental guaranteed during federal control, and on account of cash taken over when the railroads were taken, under-maintenance, materials and supplies, depreciation, and other accounts, including interest. In some cases the indebtedness of a road to the government is offset against what the government owes the company, in making final settlement, but in some other cases the amount owed by the road for additions and betterments is funded for a period of years and not used as an offset.

The bill proposed by the President to authorize the War Finance Corporation to purchase railroad securities from the Railroad Administration up to $500,000,000 and thus enable it to effect its settlements with the railroads more rapidly, failed of passage in the Senate.

The repayments on loans made during 1920 and 1921 from the revolving fund have been as follows:

Ann Arbor	$ 60,000.00
Atlanta, Birmingham & Atlantic	20,000.00
Bangor & Aroostook	4,000.00
Carolina, Clinchfield & Ohio	2,000,000.00
Chicago Great Western	240,000.00
Chicago, Indianapolis & Louisville	45,000.00
Chicago and Western Indiana	89,000.00
Great Northern	15,134,000.00
Illinois Central	296,000.00
Kansas City, Mexico & Orient	2,500,000.00
Long Island	219,000.00
Missouri Pacific	4,362,000.00
National Railway Service Corporation	388,660.65
New York Central	990,000.00
Northern Pacific	6,000,000.00
Salt Lake & Utah	15,700.00
Waterloo, Cedar Falls & Northern	60,000.00
	$32,423,360.65

Since the last announcement on December 1 payments on loans certified by the Interstate Commerce Commission have been made as follows:

Alabama, Tennessee & Northern	$ 399,000.00
Carolina, Clinchfield & Ohio	6,000,000.00
Chesapeake & Ohio	1,334,500.00
Chicago Great Western	240,000.00
Evansville, Indianapolis & Terre Haute	50,000.00
Kansas City, Mexico & Orient	2,500,000.00
Seaboard Air Line	139,500.00
Western Maryland	300,000.00
	$10,963,000.00

Commission Resumes General Rate Inquiry

Carriers Present Additional Statistical Testimony—Willard Says Rate of Return Should Not Be Less Than 6 Per Cent

WASHINGTON, D. C.

HEARINGS in the rate inquiry being conducted by the Interstate Commerce Commission were resumed on Wednesday, January 11, before Commissioners Esch and Lewis. Later Commissioner Campbell joined them. Commissioners Hall and Aitchison were unable to sit because their reappointment as members of the commission have not been confirmed by the Senate. At the opening of the hearing, Richard Waterman, secretary of the Railroad Committee of the Chamber of Commerce of the United States, presented a letter from Joseph H. DeFrees of the chamber, asking the commission to invite Secretary Hoover of the Department of Commerce to appear as a witness before the commission as the official representative of American commerce, saying that it would add a great deal to the testimony to have the information at his disposal added to record. Commissioner Esch said that this plan would be carried out. Additional statistical testimony from the railroads in the various groups which had been requested by the commission, but which the railroads had been unable to furnish completely at the previous hearing, was then introduced by statistical witnesses.

Statistical Testimony

D. S. Brigham, assistant to the president of the Boston & Maine, presented an exhibit for the New England roads, excluding the Boston & Albany, showing that for the year from September, 1920, to October, 1921, these roads had had a deficit of $7,913,789, a shortage of $57,370,953 under a 6 per cent return. For the four months, July 1 to October 31, 1921, these roads had earned a net return at the rate of 2.3 per cent, or $7,176,532. Mr. Brigham also presented an exhibit, as requested by representative of the shippers, showing the operating results of the year ended October 31 adjusted to meet present rates and costs. This showed a constructive net railway operating income of $22,530,193 or at the rate of 2.61 per cent.

Only 13 Roads Earn Over 6 Per Cent

Exhibits presented by George M. Shriver for the Eastern roads, L. E. Wettling for the Western roads, and G. W. Lamb for the Southern roads, showed that only 13 of the Class I railroads in the United States earned an excess over 6 per cent on their property investment during the year ended September 30, 1921. In the Eastern district there were seven such roads, the Cincinnati Northern; Delaware, Lackawanna & Western; Detroit & Toledo Shore Line; Lehigh & New England; Michigan Central and Perkiomen, while 14 roads in the Eastern district had actual deficits for the year. In the Western district 6 roads had an excess over 6 per cent, the Beaumont, Sour Lake & Western; Fort Worth & Denver City; Gulf, Colorado & Santa Fe; Louisiana Western; St. Louis, Brownsville & Mexico and Union Pacific, while 17 had deficits. In the Southern district all of the roads had a shortage under a 6 per cent return and 12 had deficits. For the Eastern roads the shortage under a 6 per cent return was $321,671,713; for the Western roads it was $267,130,827, and for the Southern roads it was $187,643,605. These figures for the Eastern and Western districts are exclusive of certain roads which failed to report.

The exhibits for the three districts were compiled on the same basis and gave the percentage earned for each month since September, 1920, for the 12 months ending September 30 and for the available months since the wage reduction on July 1. The Eastern roads, which in the 12 months ending September 30 earned at the rate of 2.79 per cent during the five months from July 1 to November 30 earned at the rate of 4.40 per cent. The Western roads, which for the 12 months ending September 30 earned at the rate of 3.3 per cent during the five months since the wage reduction earned at the rate of 5.16, while the Southern roads, which for the 12 months' period earned at the rate of 1.95 during the five months' period earned at the rate of 3.81. The exhibits also gave a statement of the additions and betterments made during the year ended September 30 and an estimate of the amount required to be spent in 1922 chargeable to capital account. For the Eastern roads the amount required to be spent in 1922, based on the present volume of traffic, was estimated at $458,280,327, with an addition of $400,006,068 based on the volume of traffic under normal conditions. For the Western roads the requirement for 1922 based on present

volume of traffic was $248,256,502 and the additional amount for a normal volume of traffic was $128,534,845. For the Southern district the estimated requirement based on present volume of traffic was $85,368,982 and the additional amount for a normal volume of traffic $104,502,331.

Mr. Shriver had an exhibit based on reports of three railroads covering about 70 per cent of the total material purchases excluding fuel showing an increased cost at September, 1921, prices of 101.8 per cent over the test period but a decrease at October, 1921, prices of 28.6 per cent under the prices of September 1.

Efficiency of Operation

Testimony regarding the efficiency of railroad operation was given by R. H. Aishton, president of the American Railway Association, who described the organization and work of that association which through its various committees and divisions is constantly making studies of improved methods and practices for the benefit of all the roads.

"The association exercises no managerial functions," Mr. Aishton said, "and each railroad also has its own organizations of experts who are endeavoring at all times to find better methods, but this organization co-ordinates the best thoughts of the best railroad experts in the country and places the results where they may be used by the individual roads in their own way and applied to their own problems."

Mr. Aishton showed for example that progress has been made by the railroads in reducing the number of claims for loss and damage and the time required to adjust them. The average number of claims received by each road was reduced from 1,791 in September, 1920, to 907 in August, 1921, and the average time required to adjust claims has been reduced to about 20 days. Mr. Aishton also showed that the railroads had reduced their fuel consumption per train mile and per ton mile.

While the average mileage per car per day, the average car load and the percentage of empty car miles had shown decreases during 1921 he showed that this was the natural effect of the reduction in the volume of traffic. Excluding bad order and surplus freight cars, he showed, the average miles per freight car per day had increased in 1921 and the average train speed had increased from 10.3 to 11.6 miles per hour.

The Car Service Division, Mr. Aishton said, has given very constant study to the reduction of empty car mileage, but has found that this is very largely determined by the character and volume of business. For 15 years the average percentage of empty car mileage was 31.4. During the 26 months of federal control it was 31.6, although the cars were pooled, and for the 12 months ending September 30, 1921, it was 37 per cent.

Asked to make some general observations on the efficiency of railroad operation, Mr. Aishton said that it is difficult to find anything with which to make a comparison, but he said that in his 40 years of experience he had never seen any class of men that made greater efforts to bring about economy and efficiency than the railroad men. He was not prepared to say that any better results could be obtained by consolidation of terminals than are obtained today.

Mr. Aishton was followed by Daniel Willard, president of the Baltimore & Ohio, who gave a general statement reviewing the circumstances under which the transportation act was passed, the result which the framers of the act expected it to accomplish and the developments since with particular reference to the series of questions put to the carriers by the commission for the purposes of this inquiry.

Willard Says Rate Reductions Now Unwise

Mr. Willard said that the carriers are in no financial condition at present to make a general reduction in freight rates. Rates will eventually come down, Mr. Willard said, but he added that to hasten the movement unduly would in his judgment be unwise and would not tend to promote the larger public interest.

"The carriers, unable to provide from earnings in the past reserves such as contemplated in the transportation act, are not now in position to make a general rate reduction in anticipation of possible lower operating costs to follow," said Mr. Willard. "While the present condition of affairs in the country and the rest of the world is difficult and trying, it is the logical sequence to the war and must be borne until by means of orderly and well considered processes a more normal condition can be brought about. I do not think the best interest of the public would be promoted at this time by action of any kind which would tend to immediately reduce the revenue of the carriers.

"High as railroad charges are, they are not higher relatively than other prices are or were and it is important to remember that railroad charges or prices were the very last to go up and in the nature of things can not be the first to come down. They can and will participate in the downward movement of all other prices."

Mr. Willard pointed out that even before the general freight increase went into effect on August 26, 1920, "the industrial and economic readjustments which were world wide and which were a natural outcome of the war had begun," only to be reflected some months later in this country by a sharp business decline.

"The carriers," he continued, "subject as they are to regulation by the governmental agencies of the states and nation were not able to promptly reduce their expenditures in keeping with their declining revenues and this in turn served to shrink the net earnings of the carriers so seriously that they were compelled, in order to maintain their financial integrity, to resort to forced economies in all directions, which in turn meant fewer men employed and less material used and purchased. This enforced policy on the part of the railroads contributed in a measurable degree towards accentuating the business depression."

Mr. Willard said the financial results already attained by the railroads have been accomplished "only by forced economies that are neither in the public interest nor can they be indefinitely continued."

"Railroad rates," Mr. Willard said, "are now and always have been subject to certain fundamental economic laws against which they can not prevail and the mere operation of such laws and influences will tend constantly to bring about lower rates just as has been the case not only during the last year but during all the years of railroad operation.

"I suppose the real question now is this—are railroad rates declining as rapidly as the public has fairly a right to expect? Are the railroad managers doing all that can be fairly expected of them to reduce the cost of transportation? My answer is 'yes.' In my opinion to accelerate the downward movement artificially at this time would injure the roads and would not benefit the public."

Mr. Willard proposed that not less than 6 per cent on the value of the property used for transportation purposes be adopted by the commission as constituting a rate of fair return after March 1 next when the percentages prescribed by the transportation act automatically expire under the law.

"When Congress," the witness said, "specified the rate of return now in the transportation act, it did so for the purpose of stabilizing railroad credit. Unfortunately because of conditions which were not foreseen—nor could they have been foreseen—by Congress, the results hoped for in this connection have not yet been realized. It is essential, however, that the credit of the railroads should be stabilized on a proper basis in order to restore the purchasing power of the railroads and put them in position not only to prop-

erly maintain their existing facilities, but to provide the additional facilities necessary in the public interest, and it is much more important to the public as a whole that there should be adequate transportation facilities with satisfactory service, than that there should be lower rates. Lower rates will come, but they should come only as and when the railroads are clearly in position to grant them without impairing their ability to render adequate and satisfactory service.

"Rate adjustments have already been made to correct disarrangements as to localities and some dislocations as to commodities, and in a few instances adjustments have been made for purely economic reasons as in the case of certain export rates revised in an effort to stimulate competition in world markets, and more recently with reference to agricultural products which perhaps have more widely and more completely been forced downward to a pre-war basis. More in this direction, however, the railroads cannot advisedly do at this time. Rates having generally been advanced on a uniform or percentage basis, it would seem desirable, in fact necessary, that when general reductions are made, they should be made in the same way. Adjustments, of course, must of necessity be made whenever it can be shown that existing relationships are clearly out of line. Certainly the carriers in the Eastern Region cannot make a general percentage reduction now of such an amount as to be definitely helpful, and it is doubtful if any substantial reduction could be justified with reference to any one commodity or class of traffic.

"With all this in mind I venture to think that this commission has ordered this inquiry not only for the purpose of determining what, if any, rate reductions may lawfully be ordered at this time, but also what, if any, reductions may properly be ordered in harmony with the avowed purpose and spirit of the act. Mr. Shriver has shown that if the carriers in the Eastern region were to do over again the identical business that was done during the 12 months ending October 31st, but upon a basis of rates and costs for the entire period such as was actually in effect on November 1, 1921, the estimated net result so obtained would be $473,914,000, or a return of approximately 5.4 per cent upon the property used, as tentatively valued by this commission, adjusted as has been explained in his presentation.

"I am inclined to think that Mr. Shriver's estimate is a very liberal one and might not be fully realized, but even if it could be realized it would be a mistake to view the situation so indicated as a satisfactory one, or one that would justify an immediate reduction in rates. . . .

"Nevertheless, the railroads should be able to show substantial savings during the present year in the cost of material and fuel. They will also have the benefit for the full year of the wage reductions which were effective for only half of the last year, and it is believed that in harmony with the terms of the act and because of the lowered cost of living, as well as for other pertinent reasons, the Labor Board will feel justified in ordering still further wage reductions, particularly in connection with certain classes of railroad employees. It should be borne in mind, however, that such reductions, if made at all, will only be effective for a portion and not for the whole year."

Mr. Willard was to be followed by S. M. Felton, president of the Chicago Great Western; H. E. Byram, president of the C., M. & St. P.; W. L. Mapother, president of the L. & N., and Samuel O. Dunn, editor of the *Railway Age*.

Bureau of Accounts and Statistics, I.C.C.

Great Mass of Clerical Work, Incident to the Transition Period—Revision of Accounting Regulations

Parts of the annual report of the Interstate Commerce Commission were noticed in the *Railway Age* of December 10, page 1157, and December 31, page 1317; this present article is an abstract of the annual reports of the Bureau of Accounts and the Bureau of Statistics of the Interstate Commerce Commission.

Bureau of Accounts

The activities of the Bureau of Accounts during the early part of the year were directed largely to completing the adjustments of the railway operating income for the test period which were made necessary as a result of our examinations of the accounts for the 3 years ended June 30, 1917, for the purpose of enabling us to make final certification to the President of the amount of average annual operating income of carriers under federal control. The final certifications yet to be made, relatively small in number, are due to adjustments now the subject of correspondence with the carriers affected.

Accounting examinations for the purpose of establishing the correctness of claims filed by carriers under sections 204 and 209 of the transportation act, 1920, as the basis of our certifications of amounts payable to such carriers, have gone steadily forward. During the year we have gone over the accounts of 160 carriers claiming benefits under section 204. Examinations in connection with section 209 totaled 138. Our examinations under section 204 disclosed a generally unsatisfactory condition of the accounts of the smaller roads. Our efforts to give its provisions prompt effect have been greatly hindered by defective accounting. These special examinations under sections 204 and 209 have absorbed the services of our relatively small force of field accountants to the practical exclusion of the general examinations which we deem the most effective means of policing the accounts of carriers and insuring that uniformity of accounting prescribed by our regulations. General examinations are now being resumed.

In our last report, reference was made to the creation of a depreciation section of the bureau, for the purpose of carrying out those provisions of section 20 of the interstate commerce act which require us to prescribe as soon as practicable classes of property for which depreciation charges may properly be included under operating expenses and the percentages of depreciation which shall be charged. Much progress has been made in the work of this section. It has been occupied with the many preliminary studies and analyses which must be the foundation of any determination of depreciable classes of property and the related percentages of depreciation for the various classes of carriers.

During the year work was begun on the revision of our accounting regulations. Those now in effect were last revised as of July 1, 1914. A further revision is imperative to make them responsive to requirements imposed by new legislation and to improve them further in the light of the experience gained in their practical application during the past 7 years. It has, however, been found necessary to provide for certain features in advance of the contemplated revision. This we have done through several orders formally amending the existing regulations.

Since the approval of the federal control act we have certified in tentative form the average annual railway operating income of 588 carriers for the three years ended June 30, 1917, amounting in the aggregate to $945,428,123. The sum stated does not represent the exact standard return of the carriers taken under federal control, because it has been necessary to make corrections of these tentative certifications and because it may yet be determined that some of the carriers whose income was so certified were not taken under federal control. During the year we made 3 tentative certifications, 137 corrected certifications, and ascertained that the income certified in 19 tentative certificates was computed in accordance with our accounting regulations.

Bureau of Statistics

The annual reports section receives and examines annually reports from more than 3,000 corporations, classified in 1920 as follows:

	Number of annual reports	
Steam railway companies:		
Class I	192	
Class II	319	
Class III	397	
Switching and terminal	236	
Lessor	456	
		1,600
Electric railways		318
Sleeping car companies		1
Express companies		4
Telephone companies		1,070
Water lines		115
Telegraph and cable companies		15
Pipe lines		33
Total		3,156

General News Department

The Associated General Contractors will hold their annual convention at the Hotel Winton, Cleveland, Ohio, on January 17 to 19, inclusive.

Bullinger's Guide is now published in Boston, having been bought by the New England Railway Publishing Company. See notice under New Books.

The United States Supreme Court has ordered a reargument on March 13, of the Southern Pacific dissolution case involving the ownership by the Southern Pacific of the Central Pacific.

Representative Reece introduced in the House on January 5 a concurrent resolution authorizing the appointment of a joint Congressional commission to make another investigation of transportation.

The New York Section of the American Society of Civil Engineers held a meeting on January 11, at which the subject, "Traffic Handling—Its Engineering as Well as Regulatory Aspects," was discussed, the points brought out hinging chiefly on the problems that are found in the large cities such as New York.

The Air Mail Section of the Post Office Department reports for the last three months of 1921, that ten million letters were carried by airplane, and that all of them were delivered without injury. The distance traveled by the mail-carrying airplanes in that quarter was over 391,000 miles, and 87 per cent of the trips were completed on time.

A. F. Robinson, bridge engineer of the Atchison, Topeka & Santa Fe System, Chicago, will present a paper on the Santa Fe's Experience with Treated Timber in Bridges before a joint meeting of the Western Society of Engineers and the American Wood Preservers Association in the rooms of the former organization in Chicago on Wednesday evening, January 25.

The Savannah Sectional Committee of the Signal Section of the American Railway Association will hold its next meeting at the De Soto Hotel, Savannah, Ga., on Tuesday, January 17 (not January 19 as heretofore announced). At the morning session, the meeting will discuss maintenance of mechanical interlocking and rail bonding; and at the afternoon session H. S. Balliet, assistant terminal manager of the Grand Central Terminal, New York City, will give a historical lecture on signaling, illustrated.

Power Interlocking is to be the subject for discussion before the New York Sectional Committee of the Signal Section of the American Railway Association at its meeting in New York City on Thursday, January 19. The meeting will be at the Hotel McAlpin, Broadway and 34th street, beginning at 8 p. m. W. H. Reichard, consulting engineer of the Federal Signal Company, will give an illustrated address, and all signalmen are urged to come to the meeting and be prepared to discuss power interlocking in all its phases.

Regan Train Control Demonstration on the Great Eastern Railway of England

An official trial and demonstration of the Regan automatic train control appliances was made on the Great Eastern Railway of England at Fairlop, Essex, on November 1, 1921. A special train, consisting of an engine fitted with the device, five standard passenger cars and two private cars left Stratford at 10:05 a. m. A distinguished company was present, consisting of seven representatives from France, two representatives from Belgium, the military attache of the American embassy in London, a number of officers of the Great Eastern and other English railways, and the Automatic Train Control Committee of the British Government, consisting of Col. Pringle (chairman); Sir Robert Turnbull of the North Eastern; Majors Hall and Edmonds of the Ministry of Transport; J. H. Thomas, M. P.; Mr. Acfield, Superintendent of telegraph and signals, Midland Railway; and C. Tilden Smith (secretary). The demonstration received high commendation from Col. Pringle, Chairman of the Automatic Train Control Committee of England. The original installation on the Great Eastern was made in September, 1920.

Senate Railroad Inquiry to Be Concluded

The Senate committee on interstate commerce is planning to resume and conclude at an early date the hearings in its general railroad inquiry. Chairman Cummins has written letters to those who had asked for an opportunity to testify or those whose names had been proposed as witnesses, asking them when they can appear and how much time they desire. These include W. G. McAdoo, Walker D. Hines, W. Jett Lauck, H. T. Hunt, former member of the Railroad Labor Board; J. A. Emery, counsel for the National Association of Manufacturers, and various representatives of labor organizations. The railroads will also be given an opportunity for some further testimony.

Valuation Hearings

The Interstate Commerce Commission heard arguments at Washington on January 4, 5 and 6 in the valuation cases of the Kansas City Southern and the San Pedro, Los Angeles & Salt Lake, involving the protests of the former against the final value as reported by the commission and of the latter against the tentative valuation. In both cases the representatives of the roads contended that the commission should give a detailed analysis of the methods used in determining the "final value." S. W. Moore, for the Kansas City Southern, objected because the valuation had ignored the earning capacity of the road. A hearing in the case of the Elgin, Joliet & Eastern was begun on January 9.

American Society of Mechanical Engineers

The Executive Committee of the Railroad Division announces the following action taken at a meeting on December 28: James Partington, former secretary of the division, has been elected to the Executive Committee in place of George W. Rink, who has found it necessary to resign.

A. F. Stuebing has been elected secretary of the division in place of Mr. Partington.

W. H. Winterrowd was elected vice-chairman to succeed Mr. Rink.

William Elmer of Altoona, Pa., has been added to the Membership Committee of the division.

An invitation from the Metropolitan Section has been accepted to hold a joint meeting with them in the Engineering Societies' building, New York City, on May 16, 1922. The subject of this meeting will be Railroad Refrigeration—Natural and Mechanical.

Railroad Earnings for November

Reports to the Interstate Commerce Commission from 200 Class I railroads with a mileage of 235,556 miles show that in November the railroads had a net operating income of $65,965,382, which would be at the annual rate of return of 3.8 per cent on their property investment.

Due largely to the fact that the volume of traffic decreased 20 per cent the net operating income in November was approximately $39,488,000 below that in October. Compared with November, 1920, an increase of $15,130,000 or 29.8 per cent was reported.

Forty-nine railroads suffered operating deficits in November,

20 in the Eastern, 8 in the Southern and 21 in the Western district compared with a total of 30 in October. The ratio of expenses to operating revenues in November was 79.06 per cent compared with 74.20 per cent in October.

The total operating revenues amounted to $465,353,144 or 21.4 per cent less than during the same month of 1920 while operating expenses totaled $367,912,287, a reduction of 28.4 per cent compared with November, 1920. The net operating income, which amounted to $65,965,382, fell short $37,168,618 of the amount contemplated by the Transportation Act.

During November the railroads of the United States expended $166,321,423 for maintenance purposes, 25 per cent less than was spent during that month the previous year.

The net operating income of the carriers during the first 11 months in 1921 was $561,411,608, which would be at the annual rate of return of 3.3 per cent on their tentative valuation fixed by the commission for rate-making purposes. During that period they failed by $464,605,392 or by a little less than half, of earning the amount contemplated under the rates prescribed by the commission.

Annual Meeting of A. S. C. E. to Discuss Transportation

The transportation problems of the country will be the feature of the annual meeting of the American Society of Civil Engineers to be held at the Engineering Societies building, New York, on January 18 to 20, inclusive. The first day will be devoted to the regular business meeting, followed by a luncheon and an inspection of the McGraw-Hill Company's printing plant in the afternoon and a reception and dinner dance in the evening.

The morning session of January 19 will cover the subject of water transportation and will be addressed by the following speakers: Emory R. Johnson, dean of the Wharton School of Finance and Economy, University of Pennsylvania, Philadelphia, Pa.; R. H. M. Robinson, president, United American Lines, New York; Winthrop L. Marvin, vice-president and general manager, American Ship Owners' Association, New York, and Samuel O. Dunn, editor of the *Railway Age*.

The afternoon session of the same day will be confined to railway transportation and will be addressed by the following speakers: Howard Elliot, chairman of the Northern Pacific, New York; George W. Simmons, vice-president, Simmons Hardware Company, St. Louis, Mo.; William F. Doak, vice-president, Brotherhood of Railway Trainmen, Washington, D. C.; F. A. Molitor, chairman, Board of Economics and Engineering, National Association of Owners of Railroad Securities, New York, and Edgar E. Clark, formerly chairman, Interstate Commerce Commission, Washington, D. C. There will also be an excursion on January 19 to include the New York Stock Exchange, the Hell Gate power station and other places. The evening will be given over to a smoker, before which Frank A. Vanderlip, formerly president, National City Bank, New York, will present an address on World Activities and Their Effect Upon the Engineer. On the last day, the subject of highway transportation will be the sole topic in a three session meeting. Among the speakers of this session will be Robert S. Parsons, general manager, Erie Railroad, New York.

Denial of Application to Hold Offices or Directorates with More Than One Railroad

The Interstate Commerce Commission has issued a large number of finance docket orders since the issuance of the blanket order on December 31, authorizing railroad officers and directors to hold positions with more than one carrier. It has also, however, issued a number of orders denying such authority. John G. Shedd was authorized to hold until further order the position of director of the Baltimore & Ohio and the Chicago, Rock Island & Pacific, but in so far as it relates to the further holding of the position of director of the Illinois Central, the application was denied. The application of J. Ogden Armour to retain office as director of the Illinois Central and of the Chicago, Milwaukee & St. Paul, was denied on the ground that "after due investigation it has not been shown that neither public nor private interests would be adversely affected."

An order was issued authorizing common officers and directors among the companies subsidiary to and affiliated with the Illinois Central System, but with exceptions. W. Averell Harriman was authorized to hold the position of director of the Union Pacific and of certain named subsidiaries and the position either of director of the Illinois Central and certain named subsidiaries, or director of the Baltimore & Ohio. Cornelius Vanderbilt was authorized to hold the positions of member of the board of managers and member of the executive committee of the Delaware & Hudson, and the position either of director of the Illinois Central and certain subsidiaries, or director of the Missouri Pacific. They were given 30 days within which to report to the commission which of the alternative positions they will elect to hold.

A supplemental order was issued in the case of George F. Baker, authorizing him to hold the positions of chairman and director of the Central of New Jersey, president and director of the New York & Long Branch, and director of two other subsidiaries, and the position of director of the Erie and the New York, Susquehanna & Western, and director of either the New York Central and subsidiaries, or the Delaware, Lackawanna & Western or the Lehigh Valley. In the original order the Erie was made an alternative.

Among the other orders issued were those authorizing common officers and directors among the companies comprising the systems of the Carolina, Clinchfield & Ohio, the Kansas City Southern, Chicago, Rock Island & Pacific, Norfolk & Western, Atchison, Topeka & Santa Fe, El Paso & Southwestern and the Southern.

Administration Trying to Prevent Railroad Labor Conflict

President Harding and Secretary Hoover have recently been interesting themselves in trying to find a way to avert any possible interference with transportation resulting from a conflict between the railroads and their employees growing out of the efforts of the railroads to reduce wages and effect some changes in working conditions which are about to be referred to the Labor Board. In pursuance of this purpose and at the request of the President, the Secretary of Commerce invited some of the principal railway executives and the heads of the "big four" train service brotherhoods to a dinner on Saturday, January 7, at which various aspects of the situation were discussed and it was disclosed at the White House that there are to be further conferences, although no information was given as to the details.

Those present at the dinner on Saturday included Thomas DeWitt Cuyler, chairman of the Association of Railway Executives; Daniel Willard, president of the Baltimore & Ohio; A. H. Smith, president of the New York Central; W. W. Atterbury, vice-president of the Pennsylvania; Warren S. Stone, grand chief of the Brotherhood of Locomotive Engineers; L. E. Sheppard, president of the Order of Railway Conductors; W. S. Carter, president of the Brotherhood of Locomotive Firemen and Enginemen, and W. G. Lee, president of the Brotherhood of Railroad Trainmen. Nothing was made public about the conference and apparently some efforts were made to keep the fact quiet, because no information about it could be obtained at Mr. Hoover's office, although the fact that there had been a conference was confirmed later by President Harding. It is understood, however, that there have been some apprehensions among high officers of the administration as to the possibility of trouble with the railroad labor organizations this spring at about the same time that the controversy over coal mine wages becomes acute with the termination of the present wage contracts, and that a very serious situation might be created if the train employees and the miners were to threaten a strike at the same time.

Secretary Hoover some time ago made some efforts to bring about an amicable understanding between the coal operators and the mine workers, which have thus far proved unavailing and he is also trying to do what he can to smooth out the complicated railroad labor situation, but whether he has any definite plan has not been disclosed. It is understood that the brotherhoods have expressed more concern over the efforts of the railroads to change some of the rules and working conditions which the brotherhoods have won after many years of struggle than they have over the wage question; and it has been suggested that there may be a possibility of compromise along these lines; also that Mr. Hoover is trying, if possible, to bring about a settlement without the necessity of going before the Labor Board or at least without a strike threat.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1921

Name of road.		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rentals.	Net after rentals 1920.
Alabama & Vicksburg	Nov.	141	$237,927	$52,736	$302,980	$42,011	$58,300	$8,442	$121,704	$10,973	$243,442	80.30	$59,538	$40,347	$35,194	—$103,782
	11 mos.	141	2,260,056	669,004	3,126,155	551,121	623,570	89,134	1,370,565	128,135	2,788,930	89.20	337,225	127,316	163,293	114,672
Vicksburg, Shreveport & Pacific	Nov.	171	234,125	87,902	347,023	58,349	38,384	9,700	126,566	13,762	249,204	71.80	97,819	80,624	57,071	—57,469
	11 mos.	171	2,605,104	982,682	3,814,177	630,846	694,065	107,468	1,485,348	148,572	3,097,486	81.20	716,691	525,699	366,820	265,688
Ann Arbor	Nov.	293	438,032	49,971	506,069	64,313	70,012	8,225	233,876	12,822	389,309	76.90	116,760	96,356	70,967	86,899
	11 mos.	293	3,906,878	578,668	4,708,883	593,653	995,588	91,337	2,082,518	153,276	3,916,622	83.20	792,261	573,511	432,172	—212,795
Atchison, Topeka & Santa Fe	Nov.	8,870	12,472,430	3,421,382	17,124,079	1,211,488	3,259,526	251,741	4,873,093	324,522	9,893,579	57.80	7,230,500	5,692,485	6,026,110	3,828,331
	11 mos.	8,831	120,927,576	42,360,767	175,572,238	16,534,450	35,480,133	2,835,568	61,350,334	3,914,414	119,772,403	68.20	55,799,835	43,099,220	44,435,452	25,565,192
Gulf, Colorado & Santa Fe	Nov.	1,907	1,777,353	314,737	2,220,272	571,239	483,993	38,332	671,249	64,917	1,827,357	82.30	392,915	342,596	321,665	387,134
	11 mos.	1,907	21,914,424	4,249,791	27,276,814	3,856,697	5,607,458	443,682	8,865,393	805,217	19,536,039	71.60	7,740,775	6,953,063	6,340,243	—1,270,688
Panhandle & Santa Fe	Nov.	857	685,105	112,832	837,825	5,038	313,687	6,244	282,886	17,895	624,725	74.60	213,100	191,391	172,698	—58,835
	11 mos.	857	6,900,953	1,514,762	8,850,235	517,599	2,455,871	72,011	3,026,983	220,565	6,293,657	71.10	2,556,578	2,329,292	1,975,997	—1,106,776
Atlanta & West Point	Nov.	93	104,897	69,392	196,974	25,426	49,861	7,356	82,124	9,807	178,091	90.40	18,883	13,752	3,115	26,369
	11 mos.	93	1,135,609	867,368	2,299,018	302,968	511,795	87,785	927,627	121,646	1,994,317	86.70	304,701	174,664	121,883	410,676
Western of Alabama	Nov.	133	120,492	63,318	199,451	34,547	51,285	8,720	71,738	10,622	179,848	90.20	19,603	7,218	3,670	3,412
	11 mos.	133	1,324,895	779,864	2,329,207	343,164	604,390	88,306	824,216	120,887	2,016,183	86.50	313,024	221,258	225,843	326,985
Atlanta, Birmingham & Atlantic	Nov.	639	242,447	38,176	302,014	77,716	94,529	19,414	160,439	17,961	370,128	122.50	—68,114	—86,287	—95,133	—104,347
	11 mos.	639	2,265,164	393,838	2,895,434	854,614	1,061,264	229,207	1,916,030	175,856	4,237,836	146.40	—1,342,402	—1,551,557	—1,599,249	—1,256,263
Atlantic Coast Line	Nov.	4,911	3,716,382	1,218,986	5,347,777	871,296	1,271,494	95,175	2,229,684	134,733	4,635,618	86.70	712,159	508,877	522,675	—184,124
	11 mos.	4,890	40,130,201	15,308,096	60,477,064	8,960,778	13,747,955	1,057,481	28,004,910	1,549,685	53,667,201	88.70	6,809,863	3,913,380	3,486,623	—588,690
Charleston & Western Carolina	Nov.	342	222,428	38,688	274,935	83,198	54,035	6,108	118,442	6,194	267,977	97.50	6,958	—3,072	—22,078	—56,315
	11 mos.	342	2,396,071	463,145	3,621,239	727,346	740,860	70,902	1,498,939	78,642	3,116,653	103.20	—95,414	—208,632	—301,548	—621,733
Baltimore & Ohio	Nov.	5,184	12,812,155	2,029,331	15,901,084	2,225,547	4,049,737	290,629	6,529,134	481,034	13,710,861	86.20	2,190,223	1,640,215	1,506,601	1,632,362
	11 mos.	5,184	144,271,743	27,200,806	183,117,810	22,289,943	41,758,968	3,010,752	79,148,911	5,862,658	153,492,562	83.80	29,625,248	22,865,247	20,200,295	—4,029,161
Balt. & Ohio Chicago Term	Nov.	90	.....	.....	252,387	44,030	39,959	1,647	154,562	10,702	254,904	101.00	—2,517	—48,008	39,549	42,881
	11 mos.	90	.....	.....	2,419,893	404,184	403,475	16,059	1,497,092	142,231	2,509,417	103.70	—89,524	—510,318	—562,642	—414,571
Staten Island Rapid Transit	Nov.	23	94,536	80,834	193,571	54,817	21,057	1,575	113,303	13,230	203,982	105.40	—10,411	—28,799	—41,838	—32,068
	11 mos.	23	943,098	1,142,773	2,329,718	503,954	274,220	20,944	1,382,931	155,066	2,337,115	100.30	—7,397	—186,174	—314,929	—653,638
Bangor & Arcostook	Nov.	659	585,140	92,060	700,510	128,190	127,881	3,282	256,043	18,880	535,741	76.50	164,769	135,742	138,122	223,140
	11 mos.	659	5,600,815	869,334	6,710,685	1,154,333	1,620,478	48,109	2,349,676	216,672	5,439,076	81.10	1,271,609	901,327	1,016,513	794,889
Belt Ry. Co. of Chicago	Nov.	31	.....	.....	469,056	44,345	52,729	894	197,649	10,008	305,625	65.20	163,431	133,032	134,699	143,619
	11 mos.	31	.....	.....	5,059,357	567,364	629,093	11,793	2,395,749	120,343	3,724,342	73.60	1,335,015	1,027,945	1,470,196	1,463,835
Bessemer & Lake Erie	Nov.	225	826,138	34,047	880,138	126,881	289,647	16,997	297,156	24,420	761,471	86.50	118,667	57,660	117,525	757,821
	11 mos.	225	12,159,062	436,889	12,836,937	1,772,927	4,553,816	175,482	3,984,851	306,965	10,857,890	84.60	1,979,047	1,607,847	1,965,705	5,619,361
Bingham & Garfield	Nov.	35	12,919	385	12,986	18,325	4,203	955	5,416	3,009	31,916	245.80	—18,930	—25,947	—19,808	—9 026
	11 mos.	35	153,898	3,686	166,942	214,390	49,696	15.552	85.573	43,380	409,398	245.20	—242 456	—310.430	—264,869	358,769
Boston & Maine	Nov.	2,300	4,436,446	1,749,268	6,777,061	1,091,531	1,273,841	54,137	3,086,097	223,217	5,751,851	84.90	1,025,210	790,834	433,087	—1,382,089
	11 mos.	2,300	43,949,221	21,760,783	72,148,159	12,174,355	14,676,680	665,466	37,506,729	2,719,692	68,009,740	94.30	4,138,419	1,364,736	—1,567,163	—11,842,563
Brooklyn & Eastern Dist. Term	Nov.	9	103,191	.....	111,121	6,944	21,351	128	40,517	4,296	73,236	65.90	37,885	31,536	31,536	24,770
	11 mos.	9	1.135,533	.....	1,211,014	102,285	216,612	2,651	448,166	70,237	839,951	69.40	371,063	298,441	298,761	—185,761
Buffalo & Susquehanna	Nov.	252	172,454	6,450	182,147	37,208	74,693	1,648	60,372	9,019	182,940	100.40	—793	—4,095	27,217	57,959
	11 mos.	252	1,774,439	72,071	1,888,960	425,281	925,642	29,078	690,908	111,246	2,182,155	115.50	—293,195	—329,575	47,997	187,867
Buffalo, Rochester & Pittsburgh	Nov.	589	968,199	136,012	1,147,571	170,972	472,900	19,474	480,890	36,268	1,182,799	103.10	—35,228	—35,239	68,818	598,655
	11 mos.	589	10,937.199	1,636,196	13,159,848	1,888,484	4,527,284	199,036	5,761,783	447,623	12,851,722	97.70	308,126	—43,393	578,551	1,527,589
Canadian Pacific Lines in Maine	Nov.	233	144,651	25,876	188,121	40.626	46,251	4,031	104,997	4,333	200,238	106.40	—12.117	—39,117	—45,336	—118,314
	11 mos.	233	1,838,302	476,866	2,498,165	509,180	503,847	41,941	1,279,091	43,727	2,377,786	95.20	120,379	—56,621	—180.612	—866,894
Carolina, Clinchfield & Ohio	Nov.	291	620,422	38,286	670,005	71,999	142.124	22.214	166,309	17,931	419,696	62.60	250,309	200,280	289,972	284.829
	11 mos.	291	6,263,499	481 485	6,889,058	903,874	1,610.930	246,085	1,935,243	231,039	4,923,161	71.50	1,965,897	1,548,700	2,267,109	2,242,788
Central of Georgia	Nov.	1,913	1,207,311	387,797	1,744,525	248,546	371,545	61.036	744.470	77.426	1.508,521	86.50	236,004	148,663	177,992	113,793
	11 mos.	1,913	13,643,339	5,040,496	20,579,686	3,321.446	4,451,371	707,591	9,139,135	871,830	18,564,012	90.20	2,015,674	1,142,180	1,214,309	—1,046,119
Central of New Jersey	Nov.	685	3,305,856	668,358	4,176,304	555,361	1,829,019	35,187	1,667,048	98,219	4,197,784	100.50	—21,480	—281.644	—281,315	121,733
	11 mos.	685	37,055.772	8,968,530	48,524.262	5,955,686	11.728,940	387,595	19,994,998	1,180,769	39,461,688	81.30	9,062.574	6,317,747	6,075.251	—4,623,909
Central Vermont	Nov.	413	447,367	87,563	586.536	46,355	81.623	11,871	259,340	20,788	421,465	71.90	165,071	147,699	121,067	—14,190
	11 mos.	413	4,460,875	1,144,688	6,103,930	1,085,587	1,455,026	124,957	3,516,398	233,905	6,432,190	105.40	—328,260	—551.541	—735,201	—1,450,060
Chesapeake & Ohio	Nov.	2,548	5,429,468	823,537	6,602,125	946,442	1,656.610	74,076	2,431,640	153,578	5,268,777	79.80	1,333,348	1,093,976	1,134,164	1,213,008
	11 mos.	2,545	63,083,246	10.879.024	78.174,054	11,256.496	18,627.622	728,620	29,533,309	1,819,537	62,155.310	79.50	16.018,744	13,470,291	12,197,548	10,002,363
Chicago & Alton	Nov.	1,050	1,888,478	486,022	2,516,952	400.560	783,888	52.184	924.814	60.357	2,225.439	87.40	321,513	223,404	81,563	—244,402
	11 mos.	1,050	20,599,868	6,290,417	28,575,703	4,116,641	7,748.444	573.432	11,154,411	666,476	24,324,020	85.10	4,251,683	3,315,919	1,779,822	—276,600
Chicago & Eastern Illinois	Nov.	1,130	1,734,615	362,117	2,252,235	246.596	648,561	34,183	874,440	64 505	1,878.163	83.40	374 072	253,484	284,056	382,300
	11 mos.	1,130	18,808,777	4,628.301	25,078,253	2.529.592	8,133.195	394,636	10,286,905	724,993	22,212,763	88.60	2,865,490	1,769.585	2,044,974	1,807.991
Chicago & North Western	Nov.	8,402	7,163,966	2,428,487	10,860 944	1,670.771	2,803,566	159,291	5,073,529	329,926	10.086,473	92.90	774,471	78,059	—10,608	—367.055
	11 mos.	8,402	89,204,575	31,177,435	134,196,868	19,841.957	30,598,099	1,749,350	61,519,496	3,895,826	118,420,475	88.20	15,776,393	7,690,453	7,160,924	—1,049.929
Chicago, Burlington & Quincy	Nov.	9,393	10,123,494	2,253,857	13,603,117	1,931,283	3.302,485	169,934	4,844,751	356,422	10.662,052	78.40	2,941,065	2,145.939	1,960,013	2,855 194
	11 mos.	9,393	113.590,620	29,143.656	155,327.958	20.751.947	30,967.199	1,949,997	58 527.111	4,340.434	117.831.979	75.90	37.495.979	28,442,300	26,695,722	10,018,718
Chicago Great Western	Nov.	1,496	1,435,929	364,086	1,955.118	358,492	426,228	59,861	846,401	53,965	1,758,336	89.90	196,782	114,818	—66.208	70,474
	11 mos.	1,496	16,402.762	4,515.691	22,586,248	3,374,248	4,694.344	717.287	9,564,706	647,089	19,166,897	84.90	3,419.351	2,601,134	1,149,275	—2,626,938
Chicago, Indianapolis & Louisville	Nov.	657	879,131	238,774	1,226,135	78,849	258,016	29,779	447,514	34,816	863,165	70.40	362,970	300,482	213,049	37,590
	11 mos.	656	9,781,118	2,975,628	13,952.614	1,513,104	3,530,474	337,725	5,429,715	390.183	11,363,429	81.40	2,589,185	1,913,637	1,023,005	—940,297
Chicago Junction	Nov.	12	.....	.....	453,464	58,203	33,685	652	204,547	14,133	311,220	68.60	142,244	116,685	185,893	7,060
	11 mos.	12	.....	.....	4,821,859	690,195	441,913	4,073	2,208,642	150,760	3,495,583	72.50	1,326,276	1,004,032	1,791,379	—1,342,929

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1921—CONTINUED

Name of road.		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rentals.	Net after rentals 1920.
Chicago, Milwaukee & St. Paul	Nov.	10,995	$8,690,991	$1,858,460	$11,808,316	$1,153,368	$3,604,440	$168,613	$5,333,092	$336,011	$10,659,717	90.30	$1,148,599	$392,153	$6,145	$425,780
	11 mos.	10,788	96,866,990	24,913,971	135,417,984	16,892,959	32,771,793	1,914,191	61,203,007	4,223,996	117,816,069	87.00	17,601,915	9,315,877	5,087,039	—15,656,404
Chicago, Peoria & St. Louis	Nov.	247	144,728	22,321	177,699	36,336	49,059	4,692	106,225	10,599	206,911	116.40	—29,212	—42,497	—60,660	—25,808
	11 mos.	247	1,537,018	272,524	1,916,058	340,375	552,168	51,282	1,146,137	127,524	2,217,486	115.70	—301,428	—418,205	—521,241	—545,631
Chicago, Rock Island & Pacific	Nov.	7,661	7,261,800	2,151,394	10,475,637	1,843,150	2,365,698	157,270	4,105,582	231,499	8,755,074	83.60	1,720,563	1,161,893	793,094	721,807
	11 mos.	7,661	86,868,412	27,143,015	122,228,852	17,784,414	26,720,985	1,902,380	49,786,025	2,687,311	99,434,439	81.40	22,794,413	17,584,320	13,847,757	931,406
Chicago, Rock Island & Gulf	Nov.	461	429,410	85,026	564,373	100,281	94,335	11,969	233,532	13,663	454,840	80.60	109,533	102,124	83,079	90,697
	11 mos.	461	5,478,098	1,116,768	7,040,325	1,052,135	890,078	144,914	3,047,328	169,201	5,316,735	75.50	1,723,590	1,594,478	1,280,004	723,231
Chic., St. Paul, Minn. & Omaha	Nov.	1,749	1,598,273	480,751	2,247,142	330,677	444,467	34,380	1,064,805	69,593	1,952,412	86.90	294,730	161,452	126,342	161,071
	11 mos.	1,749	17,844,510	6,347,471	25,941,370	3,357,051	5,303,757	377,204	12,507,976	856,356	22,521,078	86.80	3,420,292	1,896,127	1,511,239	1,538,946
Cincinnati, Indianapolis & Western	Nov.	321	268,680	48,603	336,745	48,742	96,436	10,520	161,600	18,438	338,432	100.50	—1,687	—8,887	—28,522	—38,184
	11 mos.	321	2,580,567	632,710	3,395,038	691,266	1,074,424	126,915	1,689,096	230,319	3,845,763	113.20	—450,725	—597,690	—727,711	—740,365
Colorado & Southern	Nov.	1,099	979,916	165,908	1,226,651	182,989	230,587	10,748	392,450	43,490	864,471	70.40	362,180	304,154	286,886	505,121
	11 mos.	1,099	9,122,704	2,235,552	12,199,990	1,811,533	2,664,008	134,006	4,302,701	555,450	9,547,285	78.20	2,652,705	1,888,823	1,869,401	2,086,179
Ft. Worth & Denver City	Nov.	454	774,812	211,749	1,035,401	104,256	168,980	11,296	303,940	33,557	627,028	60.60	408,373	375,322	376,521	195,410
	11 mos.	454	7,455,109	2,513,832	10,506,917	1,068,424	1,895,026	125,936	3,301,268	393,046	6,848,970	65.20	3,657,947	3,288,889	3,287,755	825,026
Wichita Valley	Nov.	255	152,291	32,880	194,450	26,981	8,306	29	51,168	1,411	87,838	45.20	106,612	101,356	85,035	69,715
	11 mos.	255	1,180,221	332,577	1,596,105	287,187	129,527	372	574,608	17,933	1,008,843	63.20	587,262	520,699	391,796	121,975
Columbus & Greenville	Nov.	226	113,436	38,974	164,257	28,493	14,669	2,530	58,911	6,426	110,956	67.60	53,301	53,288	27,966	47,845
	11 mos.	252	1,021,977	329,122	1,440,882	396,575	206,223	31,562	738,638	71,209	1,444,134	100.20	—3,252	—134,533	—380,485	—734,675
Delaware & Hudson	Nov.	880	3,193,226	257,167	3,637,113	460,645	1,126,980	41,211	1,339,159	148,751	3,126,242	86.00	510,871	431,251	522,406	361,654
	11 mos.	880	36,264,148	3,747,239	41,987,304	4,719,608	11,662,202	454,289	16,375,356	1,726,754	35,164,650	83.80	6,822,654	5,859,178	6,620,892	1,042,601
Delaware, Lackawanna & Western	Nov.	994	5,438,948	1,083,173	7,192,455	507,813	1,478,436	115,086	2,706,867	154,692	5,007,091	69.60	2,185,364	1,729,236	1,731,288	868,010
	11 mos.	994	58,913,383	13,406,247	79,623,440	9,085,611	17,633,388	1,206,489	32,270,033	1,883,516	62,664,354	78.70	16,959,086	12,611,561	13,070,433	1,906,761
Denver & Rio Grande Western	Nov.	2,593	2,178,374	407,315	2,828,226	629,847	706,754	43,924	977,983	87,471	2,482,220	87.80	346,006	170,837	152,208	1,347,669
	11 mos.	2,591	22,451,847	5,623,454	30,246,118	6,090,650	7,284,703	458,554	10,406,129	941,980	25,736,428	85.10	4,509,690	2,835,898	3,224,779	6,249,475
Denver & Salt Lake	Nov.	255	271,126	20,931	307,485	52,328	80,372	1,246	101,136	6,835	241,917	78.70	65,568	55,573	45,970	—9,415
	11 mos.	255	2,242,103	348,847	2,730,866	653,345	770,056	12,245	1,124,135	75,026	2,634,807	96.50	96,059	2,853	—13,354	—755,037
Detroit & Mackinac	Nov.	385	131,899	30,851	172,815	22,345	41,146	1,727	68,085	5,795	139,019	80.40	33,796	22,796	19,344	—35,371
	11 mos.	380	1,365,361	371,476	1,846,970	289,550	501,913	25,834	766,977	72,294	1,655,394	89.60	191,576	64,485	62,970	—64,928
Detroit & Toledo Shore Line	Nov.	61	310,709	.....	316,725	28,069	68,950	2,437	156,536	7,144	263,136	83.08	53,589	39,582	—82,571	89,106
	11 mos.	61	2,532,574	.....	2,575,778	306,590	373,619	27,183	730,983	75,606	1,513,981	58.77	1,061,797	889,725	405,089	—35,383
Detroit, Toledo & Ironton	Nov.	454	658,290	10,292	681,052	165,438	98,340	6,831	270,877	19,343	560,366	82.30	120,686	104,058	5,335	—212,136
	11 mos.	454	6,360,024	149,185	6,634,658	1,307,161	982,041	79,115	2,272,154	213,485	4,852,784	73.10	1,781,874	1,637,821	892,931	—1,309,401
Duluth & Iron Range	Nov.	291	58,001	16,301	93,767	57,071	72,449	1,070	100,572	13,715	245,493	261.80	—151,726	—162,141	—158,378	188,686
	11 mos.	291	4,187,925	240,527	4,876,007	992,048	1,025,841	12,932	1,788,819	204,655	4,032,470	82.70	843,537	527,813	531,738	4,567,807
Duluth, Missabe & Northern	Nov.	408	89,811	40,365	153,404	102,596	117,695	3,243	150,091	18,941	394,035	256.90	—140,631	—341,270	—341,522	416,435
	11 mos.	407	10,597,477	550,308	12,239,439	1,906,129	1,809,659	35,544	2,840,806	245,997	6,857,317	56.10	5,382,122	4,115,645	4,075,399	9,262,233
Duluth, South Shore & Atlantic	Nov.	591	232,713	82,847	363,081	50,080	60,811	5,876	200,037	12,662	335,320	92.40	27,761	751	—51,156	—52,195
	11 mos.	591	2,677,288	1,069,665	4,172,483	832,426	898,918	73,928	2,229,084	136,556	4,243,832	101.70	—71,349	—390,480	—520,314	—287,175
Duluth, Winnipeg & Pacific	Nov.	178	147,618	26,944	180,919	94,908	38,634	4,553	76,764	4,006	218,865	120.90	—37,946	—46,995	—49,769	—4,207
	11 mos.	178	1,777,767	328,315	2,169,652	538,380	468,051	60,124	1,061,333	113,611	2,239,652	103.20	—70,000	—184,976	—209,410	36,831
Elgin, Joliet & Eastern	Nov.	836	1,437,793	7	1,556,952	143,131	303,315	11,529	477,064	28,902	964,971	62.00	591,981	462,595	338,984	786,606
	11 mos.	836	16,134,031	113	17,743,921	2,160,904	3,978,819	133,728	5,941,393	415,855	12,628,380	71.20	5,115,541	4,143,664	2,815,304	2,991,422
El Paso & Southwestern	Nov.	1,027	549,137	154,385	773,092	119,486	195,936	24,285	243,173	83,297	673,895	87.20	99,197	28,209	36,460	322,761
	11 mos.	1,027	7,397,292	2,098,608	10,123,057	1,770,280	2,095,339	301,331	3,078,951	548,555	7,895,856	78.00	2,227,201	1,238,798	1,020,719	2,280,718
Erie	Nov.	1,989	6,996,779	1,042,059	8,520,387	841,448	2,429,645	123,080	3,930,377	268,961	7,629,936	89.50	890,451	685,140	746,891	24,613
	11 mos.	1,989	76,629,635	13,101,661	95,815,443	11,258,124	27,585,286	1,429,102	42,464,776	3,262,636	86,504,957	90.30	9,310,486	6,141,619	6,830,399	—14,131,436
Chicago & Erie	Nov.	269	924,866	53,293	1,023,958	173,437	162,809	17,268	513,788	38,394	899,043	87.80	124,915	51,915	—312,399	—246,177
	11 mos.	269	8,675,984	768,306	10,046,176	1,421,947	1,714,151	211,387	5,564,405	446,336	9,352,337	93.10	693,839	183,172	—2,721,702	—2,732,387
New Jersey & New York	Nov.	47	20,891	95,183	119,528	13,026	17,054	1,157	69,929	3,124	104,290	87.30	15,238	12,321	—13,562	—16,001
	11 mos.	47	213,499	1,114,468	1,367,299	181,802	208,118	17,017	755,030	31,185	1,193,147	87.30	174,152	141,943	—157,357	—249,302
N. Y., Susquehanna & Western	Nov.	135	231,897	59,432	334,523	35,321	56,766	3,106	188,281	10,290	293,764	87.80	40,759	14,900	32,526	—80,509
	11 mos.	135	2,704,454	719,705	3,931,019	585,201	594,707	40,994	2,350,525	109,510	3,680,928	93.60	250,091	—34,800	19,296	—943,356
Florida East Coast	Nov.	764	602,218	259,736	960,836	299,108	197,937	9,665	330,316	24,844	866,112	90.10	94,724	46,265	13,533	48,044
	11 mos.	764	7,098,806	3,695,561	12,337,720	2,778,690	2,399,843	145,038	4,570,269	309,177	10,293,325	83.40	2,044,395	1,350,325	919,062	1,726,458
Fort Smith & Western	Nov.	253	115,695	25,698	150,798	26,691	27,415	5,015	51,884	7,263	119,207	79.10	31,591	24,572	17,235	4,234
	11 mos.	253	1,219,024	285,167	1,637,257	395,852	373,722	56,112	657,103	81,606	1,582,463	96.70	54,794	—6,002	—73,919	72,982
Galveston Wharf Co	Nov.	13	.....	.....	188,154	154,274	4,239	818	63,524	6,560	245,419	130.40	—57,265	—79,884	—83,037	72,684
	11 mos.	13	.....	.....	2,471,663	632,927	51,002	8,579	510,810	45,148	1,539,734	62.20	931,929	739,212	737,644	195,206
Georgia	Nov.	328	266,319	101,271	398,625	42,571	80,670	19,691	232,052	19,161	394,360	98.90	4,265	—1,690	2,818	15,897
	11 mos.	328	3,222,666	1,225,410	4,781,734	544,514	1,100,961	214,690	2,623,437	221,308	4,707,268	98.40	74,466	5,217	43,519	—213,595
Georgia & Florida	Nov.	405	80,522	14,305	103,513	21,982	16,186	7,665	49,895	6,172	102,115	98.70	1,398	—6,433	—15,001	—66,399
	11 mos.	405	983,122	188,297	1,273,992	296,134	211,340	86,484	634,908	84,156	1,315,618	103.30	—41,626	—128,443	—211,863	—859,150
Grand Trunk Western	Nov.	352	1,030,466	148,831	1,246,424	118,943	279,745	31,939	622,257	48,139	1,111,044	89.10	135,380	72,330	—89,335	—298,314
	11 mos.	352	10,748,882	2,140,641	13,521,493	2,047,597	2,963,768	360,645	6,378,384	645,724	12,468,940	92.20	1,052,553	—112,223	—1,746,055	—1,379,237
Atlantic & St. Laurence	Nov.	166	187,432	34,210	237,411	57,693	34,615	3,511	139,736	22,386	259,159	109.20	—21,748	—35,215	—77,272	—14,855
	11 mos.	166	1,870,676	475,521	2,521,404	792,621	449,416	36,864	1,475,225	209,313	2,972,632	117.90	—451,228	—644,809	—1,285,010	—1,654,556
Chic., Det. & Canada Gr. Tr. Jct.	Nov.	62	135,841	11,634	153,675	22,807	29,452	3,507	90,206	4,218	150,059	97.60	3,616	—3,616	—30,110	77,652
	11 mos.	62	1,557,513	154,085	1,793,213	206,256	241,357	29,166	791,322	50,276	1,319,385	73.60	473,828	350,466	126,138	41,484
Det., Grand Haven & Milwaukee	Nov.	194	387,848	41,658	454,264	45,713	78,050	11,175	239,291	16,954	391,096	86.10	63,168	56,094	—17,570	91,914
	11 mos.	194	3,439,430	497,218	4,117,322	663,902	729,846	108,135	2,330,648	195,709	4,032,726	97.90	84,596	—26,019	—695,942	—864,457

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1921—CONTINUED

Name of road.		Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rentals.	Net after rentals 1920.
						Maintenance of										
			Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Great Northern	Nov.	8,161	$8,660,094	$1,224,081	$10,674,119	$817,528	$1,797,257	$114,979	$3,763,660	$199,578	$6,779,125	63.50	$3,894,994	$3,342,959	$3,410,066	$1,892,673
	11 mos.	8,163	69,188,056	15,282,073	93,641,723	12,999,026	19,447,541	1,468,467	37,458,344	2,569,329	74,557,603	79.60	19,084,120	11,264,258	11,610,475	2,815,846
Green Bay & Western	Nov.	252	86,563	15,570	110,101	18,261	20,701	2,571	40,791	3,218	85,542	77.60	24,559	17,059	15,182	17,360
	11 mos.	252	1,002,040	189,583	1,285,700	238,664	277,700	20,173	472,842	33,511	1,042,661	81.00	243,039	161,611	134,382	44,550
Gulf Coast Lines	Nov.	920	636,070	138,753	824,714	155,963	125,770	22,687	266,095	35,106	602,946	73.10	221,768	185,560	183,250	371,067
	11 mos.	926	7,505,543	2,123,647	10,235,461	1,833,655	1,661,103	286,696	3,258,186	431,014	7,595,011	74.20	2,640,450	2,224,226	1,947,046	1,302,109
Gulf & Ship Island	Nov.	307	167,955	35,962	219,556	48,579	40,504	6,640	79,402	11,694	187,195	85.26	32,361	22,447	11,845	—28,276
	11 mos.	307	1,956,129	482,397	2,623,039	479,707	497,784	70,670	966,363	144,135	2,162,608	82.40	460,431	240,905	216,002	—346,515
Gulf, Mobile & Northern	Nov.	436	288,491	34,987	340,142	57,160	50,148	14,084	134,856	13,783	269,049	79.10	71,093	49,012	38,921	—30,247
	11 mos.	455	3,124,751	446,897	3,749,332	654,192	741,647	142,620	1,664,032	163,330	3,362,224	89.70	387,108	171,167	79,347	—1,062,347
Hocking Valley	Nov.	350	975,487	88,799	1,142,583	92,227	241,936	10,598	414,033	33,334	791,945	69.30	350,638	289,762	367,280	190,701
	11 mos.	350	11,214,181	1,171,440	13,222,248	1,584,408	4,238,549	121,185	4,637,430	385,622	10,965,462	82.90	2,256,786	1,385,091	1,196,637	1,614,959
Illinois Central	Nov.	4,799	8,538,153	1,845,953	11,124,067	1,984,036	3,159,802	150,745	4,143,551	300,585	9,787,810	88.00	1,336,257	693,728	761,181	1,533,552
	11 mos.	4,799	98,849,012	22,651,031	130,040,639	20,698,760	31,390,860	1,726,201	49,134,463	3,402,219	106,997,229	82.30	23,043,410	15,232,620	16,455,579	5,676,055
Yazoo & Mississippi Valley	Nov.	1,381	1,519,401	379,913	1,978,751	379,448	414,429	24,253	695,791	49,134	1,559,149	78.80	419,602	303,569	286,090	325,580
	11 mos.	1,381	14,139,456	3,836,506	18,988,365	3,999,386	4,142,606	278,898	7,928,334	590,828	16,927,680	89.10	2,060,685	788,157	716,309	—425,139
International & Great Northern	Nov.	1,159	793,919	202,140	1,136,432	268,678	241,979	26,546	534,054	43,916	1,119,522	98.50	16,910	—26,308	—93,303	191,188
	11 mos.	1,159	12,331,168	2,740,301	16,447,636	2,694,832	3,322,823	288,511	8,203,917	573,668	15,156,380	92.20	1,291,256	869,949	—307,695	—1,873,559
Kansas City, Mexico & Orient	Nov.	272	116,165	12,900	138,363	28,202	35,028	5,128	61,692	11,558	141,608	102.30	—3,245	—11,285	—2,915	7,532
	11 mos.	272	1,422,811	153,665	1,675,867	345,862	491,978	60,465	800,733	141,133	1,849,171	109.80	—164,304	—252,776	—216,659	—772,629
Kan. City, Mex. & Orient of Tex.	Nov.	465	185,841	18,311	211,145	18,405	41,347	5,470	91,024	8,240	164,486	77.90	46,659	40,509	20,696	16,911
	11mos.	465	1,747,180	200,342	2,034,346	443,749	565,469	59,311	1,150,684	74,844	2,294,057	112.80	—259,711	—327,386	—524,600	—755,280
Kansas City Southern	Nov.	779	1,197,749	159,894	1,511,837	286,004	288,041	37,607	515,620	65,658	1,192,419	78.90	319,418	221,216	215,860	176,573
	11 mos.	779	14,782,633	2,102,173	18,189,365	2,540,148	3,259,993	420,665	6,347,847	788,117	13,345,224	73.40	4,844,141	3,939,865	3,751,475	1,912,999
Texarkana & Ft. Smith	Nov.	93	141,248	13,714	167,231	—2,280	25,539	4,654	55,280	8,584	91,572	54.80	75,659	67,972	39,998	81,953
	11 mos.	93	1,672,895	187,002	2,026,960	196,356	238,721	55,659	681,960	103,132	1,276,881	62.90	730,079	667,886	412,430	454,502
Kansas City Terminal	Nov.	27	.....	.....	144,676	16,105	17,658	.....	54,642	3,584	94,655	65.40	50,021	25,143	239,378	150,833
	11 mos.	27	.....	.....	1,486,011	204,116	223,658	.....	590,254	41,096	1,086,164	73.10	399,847	91,509	2,509,744	1,929,895
Kansas, Oklahoma & Gulf	Nov.	314	163,559	15,192	189,619	43,269	25,746	4,818	80,344	9,686	164,127	86.60	25,492	16,413	7,624	8,459
	11 mos.	317	1,848,390	167,882	2,120,264	511,680	357,236	46,790	931,116	116,559	1,965,829	92.70	154,435	54,349	—42,173	—324,531
Lake Superior & Ishpeming	Nov.	33	21,680	89	25,828	13,080	9,153	237	11,267	2,370	26,107	139.80	—10,279	—15,638	—15,310	41,840
	11 mos.	33	333,327	1,923	404,356	187,366	165,783	2,806	130,325	32,937	519,217	128.41	—114,861	—174,765	—169,655	733,208
Lake Terminal	Nov.	13	.....	.....	90,500	7,806	14,812	.....	34,944	8	57,564	63.60	32,936	24,211	37,594	—42,099
	11 mos.	13	.....	.....	1,109,901	147,973	194,673	.....	593,533	1,408	937,587	84.50	172,314	104,154	152,362	—294,917
Lehigh & Hudson River	Nov.	95	267,971	3,588	281,083	34,480	47,944	1,303	96,218	7,516	187,461	66.70	93,622	81,471	59,786	36,940
	11 mos.	1,448	57,926,634	7,157,566	69,612,646	7,454,685	23,714,585	19,436	1,224,166	83,573	2,183,234	73.10	803,139	669,473	426,181	—84,326
Lehigh & New England	Nov.	237	405,047	1,949	416,775	61,171	119,312	5,650	137,217	14,876	338,222	81.20	78,553	56,483	73,065	138,922
	11 mos.	237	4,308,396	23,235	4,497,980	671,502	1,065,669	68,580	1,487,977	178,266	3,471,765	77.20	1,026,215	821,848	930,226	776,708
Lehigh Valley	Nov.	1,448	5,385,445	547,983	6,330,327	449,086	1,828,104	103,030	2,514,405	136,769	5,050,785	79.80	1,279,542	1,119,763	1,174,330	633,210
	11 mos.	1,448	57,926,634	7,157,566	69,612,646	7,454,685	23,714,585	1,120,890	29,034,784	1,549,194	63,131,317	90.70	6,481,329	4,665,043	4,749,047	—6,944,210
Los Angeles & Salt Lake	Nov.	1,168	1,110,135	348,700	1,602,751	214,403	304,313	46,974	565,255	29,133	1,200,931	74.90	401,820	298,972	227,071	262,951
	11 mos.	1,168	11,396,361	5,142,485	18,105,921	3,772,778	3,757,386	527,713	6,157,727	378,345	15,128,082	83.60	2,977,839	1,890,455	1,420,831	3,171,054
Louisiana & Arkansas	Nov.	302	249,209	31,318	289,952	61,943	45,474	7,494	79,276	7,844	201,435	69.50	88,517	56,417	54,214	56,946
	11 mos.	302	2,673,721	372,361	3,134,552	590,321	712,042	71,187	1,050,318	93,584	2,512,046	80.10	622,506	420,844	344,684	583,788
Louisiana Ry. & Nav. Co.	Nov.	343	230,409	32,897	272,918	61,587	47,401	9,393	116,328	11,422	245,907	90.10	27,011	10,908	—15,962	—47,905
	11 mos.	343	3,051,905	378,273	3,615,415	725,758	475,929	113,379	1,398,535	137,238	2,847,131	78.76	768,284	591,197	307,461	—83,444
Louisville & Nashville	Nov.	5,037	7,581,680	1,641,750	9,763,106	1,567,462	2,592,526	193,703	3,847,493	223,602	8,459,587	86.60	1,303,519	1,033,900	1,061,041	959,494
	11 mos.	5,040	80,775,662	21,324,009	108,744,004	17,173,628	30,949,068	2,259,666	47,142,822	2,743,747	100,524,836	92.40	8,219,168	5,020,275	4,200,814	2,722,826
Louisville, Henderson & St. Louis	Nov.	199	136,716	55,807	216,533	59,023	37,872	6,067	74,607	7,901	185,470	85.70	31,063	18,437	6,623	4,087
	11 mos.	199	1,736,760	696,388	2,641,457	498,596	490,009	72,791	975,733	95,211	2,132,334	80.70	509,123	422,636	270,361	236,605
Maine Central	Nov.	1,215	1,225,936	341,458	1,670,607	376,658	365,089	10,926	765,368	49,030	1,568,580	.94	102,027	—2,973	—35,693	122,678
	11 mos.	1,215	13,240,967	4,544,302	19,072,529	3,547,138	4,351,387	148,200	9,400,949	519,908	18,001,299	.94	1,071,230	—89,320	—312,750	—2,209,300
Midland Valley	Nov.	388	262,911	73,603	362,296	55,695	52,772	4,516	118,519	13,518	245,020	67.60	117,276	73,542	68,741	152,237
	11 mos.	388	3,068,189	849,512	4,116,541	864,807	662,016	52,568	1,396,160	199,416	3,169,876	77.00	946,665	821,162	777,267	667,557
Minneapolis & St. Louis	Nov.	1,650	1,201,580	156,959	1,433,625	170,841	276,894	24,499	627,768	39,689	1,139,860	79.50	293,765	253,241	204,303	—32,402
	11 mos.	1,650	12,219,134	2,047,813	15,000,489	2,381,776	3,507,575	274,776	7,296,583	482,981	13,943,997	93.00	1,056,492	284,707	—32,763	—1,409,927
Minn., St. Paul & Sault Ste. Marie	Nov.	4,375	3,043,048	567,394	3,935,114	639,502	893,609	52,996	1,556,688	98,985	3,258,321	82.80	676,793	548,915	480,318	560,634
	11 mos.	4,290	28,970,126	7,519,570	39,829,798	6,789,446	9,404,616	586,985	18,279,527	1,216,201	36,514,895	91.70	3,314,903	613,237	—177,865	1,256,850
Mississippi Central	Nov.	259	92,052	16,239	113,949	36,400	21,568	5,314	43,955	6,187	112,624	98.80	1,325	—5,930	—18,024	18,042
	11 mos.	178	827,245	210,383	1,083,674	243,411	333,313	36,239	395,688	75,506	1,083,457	100.20	—2,783	—74,361	—117,975	—304,822
Missouri & North Arkansas	Nov.	368	—2,939	—22	815	2,400	5,333	52	4,336	2,926	15,047	84.60	—14,232	—18,596	—24,237	10,930
	11 mos.	364	412,210	191,355	662,473	247,271	277,214	24,518	456,292	58,224	1,063,497	160.50	—401,024	—450,223	—529,277	—291,557
Missouri, Kansas & Texas	Nov.	1,714	2,083,577	504,540	2,810,564	342,423	759,282	43,225	812,311	87,280	2,051,386	73.00	759,178	665,982	798,278	652,652
	11 mos.	1,715	22,066,658	6,387,164	30,939,850	4,479,542	8,150,419	503,102	10,272,317	1,047,432	24,480,126	79.10	6,459,724	4,709,691	5,856,949	4,865,541
Mo., Kansas & Texas of Texas	Nov.	1,739	1,521,578	470,556	2,153,402	413,674	375,241	38,981	785,223	73,710	1,699,938	78.90	453,464	360,469	136,131	303,509
	11 mos.	1,739	16,940,168	6,102,505	25,004,681	3,931,313	4,257,082	462,602	9,601,060	994,245	19,394,829	77.60	5,609,852	5,010,499	2,566,065	—5,939,120
Wichita Falls & Northwestern	Nov.	328	158,655	28,439	197,725	34,102	28,654	673	53,499	5,954	122,882	62.10	74,841	12,625	—12,201	—6,263
	11 mos.	328	2,112,853	349,347	2,577,006	422,431	338,324	10,158	834,986	77,818	1,683,475	65.30	893,531	722,248	482,087	—628,182

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1921—CONTINUED

Name of road.		Average mileage operated during period.	Operating revenues			Operating expenses						Net from railway operation.	Operating income (or loss).	Net after rentals.	Net after rentals 1920.
			Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.				
Missouri Pacific	Nov.	7,300	$7,139,132	$1,452,469	$9,294,690	$1,457,641	$1,902,142	$153,689	$3,550,920	$264,776	$7,350,367	79.10	$1,944,323	$1,537,111	$1,155,648	$1,603,204
	11 mos.	7,300	75,418,180	17,752,486	102,019,816	16,594,540	21,521,846	1,775,917	41,550,602	3,103,086	84,857,259	83.20	17,162,557	13,228,516	9,972,570	—5,699,485
Mobile & Ohio	Nov.	1,165	1,253,526	138,173	1,470,991	219,964	367,588	41,647	599,972	49,873	1,279,906	87.00	191,085	123,297	100,465	118,917
	11 mos.	1,165	14,133,838	1,711,649	16,684,855	2,310,988	4,534,498	505,841	6,954,157	575,610	14,863,625	89.10	1,821,230	1,138,350	996,444	—926,828
Monongahela	Nov.	106	447,128	33,831	484,425	52,951	71,361	1,572	123,073	7,302	256,199	52.90	228,526	211,026	150,479	95,706
	11 mos.	106	3,566,791	388,306	4,006,782	762,868	747,428	19,409	1,153,319	88,802	2,771,826	69.20	1,234,956	1,152,450	609,958	316,500
Monongahela Connecting	Nov.	7	.....	.....	107,114	14,412	20,148	506	44,440	5,338	84,844	79.20	22,270	20,321	12,185	—5,298
	11 mos.	7	.....	.....	727,267	113,836	164,708	5,832	368,963	64,611	717,950	98.70	9,317	—10,413	—75,193	359,032
Montour	Nov.	56	86,405	710	89,404	22,398	29,196	927	25,289	6,353	84,163	94.10	5,241	2,669	13,649	76,015
	11 mos.	56	1,288,338	10,366	1,319,538	317,780	545,226	12,113	361,480	76,767	1,313,420	99.50	6,118	—29,862	186,356	351,203
Nashville, Chattanooga & St. Louis	Nov.	1,258	1,223,884	460,085	1,790,856	283,163	551,462	69,277	715,569	54,756	1,679,394	93.80	111,462	71,274	56,612	—57,917
	11 mos.	1,258	13,285,539	4,706,991	19,381,706	2,794,422	4,974,821	767,088	7,622,805	613,653	17,829 344	92.00	1,552,362	1,003,891	1,348,474	—30,348
Nevada Northern	Nov.	165	27,456	1,872	33,044	10,698	3,892	388	3,989	3,042	25,009	75.70	8,035	1,873	1,871	10,529
	11 mos.	165	233,155	51,083	323,944	121,041	60,903	6,391	123,334	36,907	348,831	107.60	—24,887	—115,760	—91,570	357,477
Newburgh & South Shore	Nov.	7	.....	.....	184,942	6,302	28,796	.....	63,044	3,321	101,463	54.90	83,479	70,820	67,592	34,337
	11 mos.	7	.....	.....	1,332,780	143,877	287,856	.....	588,011	45,973	1,065,717	80.00	267,063	146,362	168,098	—230,274
New Orleans Great Northern	Nov.	274	161,257	33,012	204,341	37,978	67,510	6,289	73,972	10,230	196,620	96.20	7,721	—10,305	—25,434	14,700
	11 mos.	274	1,770,644	479,200	2,355,149	389,602	554,008	59,316	965,099	109,815	2,082,706	88.40	472,443	89,655	—15,216	—70,855
New York Central	Nov.	6,078	17,974,571	6,674,488	27,736,185	3,964,354	3,230,340	272,252	10,759,074	710,344	19,263,344	69.50	8,472,841	6,807,006	6,856,484	2,846,588
	11 mos.	6,077	179,814,418	84,079,036	296,197,330	36,370,488	64,357,177	3,472,010	117,201,898	8,709,002	234,246,008	79.10	61,951,322	43,633,727	45,092,950	3,741,159
Cincinnati Northern	Nov.	244	273,004	14,824	295,836	58,986	70,872	3,810	102,565	7,119	243,306	82.20	52,530	32,344	15,781	24,719
	11 mos.	245	3,236,105	203,011	3,544 656	564,590	655,416	51,968	1,206,282	81,889	2,559,208	72.20	985,448	797,859	671,618	356,071
Cleve., Cin., Chic. & St. Louis	Nov.	2,415	4,686,221	1,191,541	6,392,387	812,219	1,713,250	95,199	2,208,812	160,676	5,040,401	78.90	1,351,986	983,195	990,455	829,292
	11 mos.	2,414	52,172,898	15,898,743	73,762,984	10,286,104	17,353,809	1,162,262	30,528,156	1,837,356	61.765,550	83.70	11,997,434	8.313,876	7,156,843	7,941,543
Indiana Harbor Belt	Nov.	120	.....	.....	730,030	129,915	84,792	2,995	312,739	18,917	549.358	75.30	180,672	157,897	57,794	296,603
	11 mos.	120	.....	.....	8,351,154	1,115,961	1,543,090	40,568	3,561,108	260,423	6,521,290	78.10	1,829,864	1,584,967	453,077	—2,700,858
Kanawha & Michigan	Nov.	176	295,845	52,289	360,174	63,704	96,6 8	4,069	121,991	11,119	297,464	82.60	62,710	32,201	63,956	193,802
	11 mos.	176	3,696,425	647.071	4,501,820	795,055	1,561,218	42,778	1,538,998	121,047	4,059,050	90.20	442.770	75,431	451,709	644,339
Lake Erie & Western	Nov.	738	660,913	35,134	730.608	122,115	218,150	17.372	248,922	29,686	636,612	87.10	93,996	45,254	42,193	60,014
	11 mos.	738	7,401,499	597.142	8,398,781	1,426,207	2,250,127	205,032	3,594,226	301,342	7,776,258	92.60	622,523	77,038	—25,482	—123,202
Michigan Central	Nov.	1,865	4,016,082	1,383.522	5,964,073	786,950	1,002,073	74,294	2,306,196	141,232	4,376,598	73.40	1,587,475	972,287	896,831	267,698
	11 mos.	1,865	42,166.494	18,425,403	67.054.847	7,858,496	13,392.900	1,015.860	26,387.482	1,627,935	51,127,239	76.20	15,927,608	12,975,145	12,867,472	4,390,140
Pittsburgh & Lake Erie	Nov.	227	1,748,712	211,260	2,045,705	277,671	574,900	21,931	746,804	63,485	1,686,869	82.50	358,836	138,476	325,404	1,179,414
	11 mos.	227	17,131,813	2,755.139	21,317,913	3,543,389	6,668,740	223,871	8,276,409	768,072	19,497.933	91.50	1,819,980	—595,737	1,747,467	1,917,899
Toledo & Ohio Central	Nov.	503	739,864	63,794	837,888	137,714	76,803	10,845	354,879	26,319	609,617	72.80	228,271	167,744	183,491	401,329
	11 mos.	503	8,773,003	829,721	10.001.841	1,634,404	2,316.011	116 492	3,895.137	308,019	8.300.103	83.00	1,701,738	1,062,920	1,330,322	1,181,958
New York, Chicago & St. Louis	Nov.	574	2,142,184	101,305	2,325,245	274,708	387,718	59,121	837,920	85,451	1,649,821	70.90	675,424	443,553	460,210	357,878
	11 mos.	574	22,927,993	1,320,004	24,785,612	2,746.012	4,823,423	624,883	9,817,374	888,715	18.948,189	76.40	5,837,423	4,242,138	4,112,764	3,443,722
N. Y., New Haven & Hartford	Nov.	1,986	5.152,380	4,108,247	10.270,428	1,028,397	2,162.936	52,151	4,199,408	305,026	7,906,579	77.00	2,363,849	2,002,832	1,524,730	—783,994
	11 mos.	1,986	48,936,868	46,851.374	106,505,819	16,143,455	25,148,482	5,148,482	50,363,276	3,735,041	97,987,400	92.00	8,518,419	4,204,813	—8,498	—11,283,346
Central New England	Nov.	301	744,762	18,016	789,935	136,812	84,539	23,452	223,243	12.015	460.061	58.24	329,874	308,391	269,597	88,807
	11 mos.	301	7,194,647	266,795	7,753,574	1,491,282	1,116,589	43,110	2,788,406	152,998	5,592,770	72.13	2,160,804	1,934,327	1,218,885	—2,158,914
New York, Ontario & Western	Nov.	569	797,846	114,493	1,079,482	150,484	265.964	17,388	479,357	28,277	941,470	87.20	138,012	102,306	54,993	103,872
	11 mos.	569	8,069,894	3,286,212	13,135.030	2,122,871	3,012.371	161,685	5,524,718	345,760	11,167,405	85.00	1,967,625	1,569,677	1,276,053	—149,274
Norfolk & Southern	Nov.	942	593,339	120.138	749,685	93,831	119,802	20,574	312,406	29,224	576,247	76.90	173,438	142,670	108,748	79,115
	11 mos.	2,225	61,291,146	9,267,933	73,541.696	10,749,431	17,720,177	782,075	27,913,032	1,677,065	59,005,451	80.20	14,536,245	10,200,858	12,731,135	2,765,506
Norfolk & Western	Nov.	2,232	5,950,244	737,314	6.939,600	989,367	1,598,188	66.802	2,174,707	133,910	4,978,633	71.70	1,960,967	1,560,610	1,922,131	1,188,856
	11 mos.	942	5,438,448	1,490.771	7.375,949	1,159,051	1,132,902	244,990	3,355,874	355,243	6,252.973	84.80	1,122.976	767,220	624,776	—774,303
Northern Pacific	Nov.	6,667	7,047.396	1,220,329	8,919,928	833.083	2,129,020	126.091	3,148,792	224.081	6,602,657	74.00	2,317,271	1,241,362	1,417,726	—948,778
	11 mos.	6,657	63,500,772	15,834.574	87,037,246	13,686,435	19,782.494	1,366,083	33,943,082	2,632,437	72,566,299	83.40	14,470,947	6,240,400	8,838,299	7,000,572
Northwestern Pacific	Nov.	507	384.306	184,296	650,406	148,120	110.499	5,437	261,846	14,157	542,142	83.40	108,264	61,898	42,265	—27,251
	11 mos.	522	4.429.589	2.663.302	8,040,270	1,397,747	1,093,764	67,690	3,076,152	177,981	5,838,988	72.60	2.201,282	1,773,856	1,637,116	1,073,795
Pennsylvania	Nov.	7,323	29,552,415	9,324,612	42,043,790	4,320,538	11,738,663	410,179	15,820,745	1,132,227	34,092,731	81.10	7,951,059	6,281,440	5,909,756	4,040,063
	11 mos.	7,323	304,658,466	118,855.850	460,692.165	55,498,314	119,903,819	4,910,389	195,489,237	12,494,033	395,978,767	86.00	64,713,398	45,343.143	37,995,964	—53,906,860
Baltimore, Chesa. & Atlantic	Nov.	87	68,827	28,552	100,877	11.139	20,180	1,435	72,802	3,491	109,047	108.10	—8,170	—8,170	—5.344	—20,195
	11 mos.	87	1,005.760	457.068	1.504.906	138,954	317,326	18,421	865,207	42,854	1,382.762	91.90	122,144	76.528	90,055	—171,169
Cin., Lebanon & Northern	Nov.	76	108,000	7,226	153,838	18.870	17,882	1,115	63,510	2,522	103,849	67.50	49,989	40,980	40,871	6,479
	11 mos.	76	919,800	86,232	1,127,383	188,850	290,158	19,415	709,328	32,210	1,239,949	110.00	—112,566	—208,212	—201,889	—259,434
Grand Rapids & Indiana	Nov.	575	672,300	155.742	894,918	96,328	210,848	13,513	424,135	25,664	770,860	86.10	124,058	86,660	63,303	185,646
	11 mos.	575	5,378.490	2.167.536	8,137,458	961,567	1.949.528	159,072	4,427,386	279,578	7.799,818	95.90	337,640	—71,468	—274,195	—479,506
Long Island	Nov.	398	819,755	1,159,575	2.150.873	266.928	365,671	16,901	1,027,013	55,007	1,748,157	81.30	402,716	315,937	233,752	—184,952
	11 mos.	398	7,632.530	16,872,903	26,711,527	3,080,657	4,589,804	204,562	12,488,336	683,243	21,243,428	79.50	5,468,099	4,049,486	3,453,315	—868,217
Md., Delaware & Virginia	Nov.	82	66,781	18.870	88.573	9.315	16,493	684	73,135	2,190	101,817	115.00	—13,244	—13,244	—17,604	—17,412
	11 mos.	82	750,165	375,990	1,161.785	120.060	231,109	15,152	779,185	27,606	1,173,112	101.00	—11,327	—36,530	—77 655	—274,647
N. Y., Phila. & Norfolk	Nov.	122	425.000	71,636	529.990	30,698	157,277	7,018	362,960	14,727	583,019	110.00	—53,029	—72,348	—83,334	22,792
	11 mos.	122	4,220,700	1,060.207	5,776,641	538,531	1,680,395	87.843	3,666,880	157,216	6,267,807	108.50	—491,166	—717,621	—895,539	—706,529
Pitts., Cin., Chic. & St. Louis	Nov.	2,406	6,480,600	1,538,347	8,682,091	1,162,564	2,140,490	106,153	3,399,395	215,658	7,084,691	81.60	1,597,400	812,720	660,222	401,407
	11 mos.	2,406	59,784,000	20,886,939	89,647,693	12,015,954	25,637,590	1,326,197	40,458,207	2,526,817	82,722,186	92.30	6,925,507	2,343,896	373,011	—11,687,590

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1921—CONTINUED

Name of road.		Average mileage operated during period.	Operating revenues			Operating expenses						Net from railway operation.	Operating income (or loss).	Net after rentals.	Net after rentals 1920.
						Maintenance of									
			Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.				
West Jersey & Seashore	Nov.	359	$367,417	$380,202	$802,665	$148,212	$186,653	$13,950	$465,896	$26,056	$852,049	106.20	—$49,384	—$49,410	—$57,860	—$20,981
	11 mos.	359	3,608,218	7,774,944	12,205,974	1,841,421	2,285,211	154,027	6,098,927	286,799	10,772,964	88.30	1,433,010	727,292	514,380	—921,695
*Cumberland Valley & Martinsburg	Nov.	33	90,000	5,623	95,466	9,124	24,178	669	33,141	2,118	69,230	72.50	26,236	21,152	15,475	—7,993
	11 mos.	33	1,167,300	69,994	1,256,896	126,813	231,785	7,826	403,942	23,589	793,955	63.20	462,941	408,182	343,355	—118,342
Peoria & Pekin Union	Nov.	19	9,967	1,123	148,082	34,099	51,500	56	48,836	7,212	144,703	97.70	3,379	—11,896	7,190	20,433
	11 mos.	19	154,268	22,296	1,547,509	222,969	374,565	1,161	781,506	78,252	1,458,453	94.20	89,056	—72,146	172,860	—275,425
Pere Marquette	Nov.	2,222	2,660,152	370,477	3,304,921	419,361	676,769	41,142	1,353,347	96,439	2,585,462	78.20	719,459	525,404	322,276	406,383
	11 mos	2,231	27,324,333	5,507,907	35,517,130	4,289,477	7,515,022	529,004	14,381,151	1,170,001	27,969,341	78.70	7,547,789	6,044,013	5,021,006	165,190
Philadelphia & Reading	Nov.	1,127	6,276,331	839,019	7,393,366	701,123	1,846,092	64,401	2,815,396	138,712	5,564,837	75.30	1,828,529	1,679,340	1,508,813	1,651,232
	11 mos.	1,126	65,536,590	9,394,679	78,099,043	8,950,837	21,130,360	645,728	31,267,353	1,727,145	63,791,992	81.70	14,307,051	12,207,557	10,410,538	—1,067,888
Atlantic City	Nov.	177	89,023	118,821	215,900	53,049	37,587	4,271	164,233	4,007	263,183	121.90	—47283	—66,014	—88,508	—85,159
	11 mos.	177	1,270,476	3,006,980	4,379,101	693,671	568,037	42,406	2,338,941	37,090	3,681,010	84.10	698,091	488,910	131,972	129,156
Perkiomen	Nov.	41	109,337	7,533	120,826	7,368	3,846	107	43,219	882	55,446	45.90	65,380	55,688	50,764	49,618
	11 mos.	41	1,024,439	107,930	1,176,418	112,125	44,713	834	445,168	7,550	610,640	51.90	565,778	481,439	420,041	425,780
Port Reading	Nov.	21	125,903	.....	173,689	16,462	10,707	230	60,522	1,450	89,371	51.50	84,318	70,834	2,792	—50,839
	11 mos.	21	1,500,212	.....	2,073,488	249,288	92,173	1,465	758,507	18,493	1,119,922	54.00	953,566	800,727	122,581	—396,034
Pittsburgh & Shawmut	Nov.	102	115,476	5,509	122,231	20,616	30,635	1,345	36,848	5,782	95,226	77.91	27,005	25,403	36,957	81,348
	11 mos.	102	1,103,164	59,606	1,182,147	258,653	410,856	19,176	410,818	75,878	1,175,381	99.43	6,766	—4,057	216,066	588,510
Pittsburgh & West Virginia	Nov.	63	149,478	10,974	192,637	37,333	206,902	1,393	53,370	8,064	317,256	164.70	—124,619	—147,855	—157,529	27,273
	11 mos.	63	1,370,581	131,226	1,850,822	530,265	1,107,489	21,094	632,185	152,122	2,562,999	138.50	—712,177	—939,913	—930,750	—225,653
Pittsburgh, Shawmut & Northern	Nov.	210	84,904	7,154	94,600	26,120	28,352	1,188	40,667	5,409	101,739	107.50	—7,139	—9,390	—9,085	—15,395
	11 mos.	210	980,863	77,526	1,085,618	313,288	443,557	16,358	494,132	81,655	1,349,052	124.30	—263,434	—288,173	—169,251	—50,313
Quincy, Omaha & Kansas City	Nov.	252	83,709	23,534	116,998	29,247	12,360	814	18,652	2,110	63,778	54.50	53,220	49,289	43,154	—3,751
	11 mos.	252	828,255	286,316	1,210,431	387,663	191,981	10,651	658,803	26,656	1,274,788	105.30	—64,357	105,963	—154,720	—399,772
Rich., Fredericksburg & Potomac	Nov.	117	361,846	246,856	717,131	114,024	118,236	7,964	269,096	27,322	547,102	76.30	170,029	140,708	112,123	55,088
	11 mos.	117	4,713,259	3,303,503	9,130,413	1,344,077	1,549,142	87,779	3,718,919	313,873	7,175,081	78.60	1,955,332	1,568,113	1,143,997	1,800,658
Rutland	Nov.	415	281,942	112,375	463,084	91,215	80,856	8,249	202,225	12,545	405,589	87.60	57,495	33,779	44,612	1,543
	11 mos.	415	2,990,543	1,437,374	5,373,759	1,071,989	1,083,747	95,671	2,424,350	153,580	4,849,403	90.20	524,356	260,920	392,641	—249,417
St. Louis-San Francisco	Nov.	4,760	4,710,511	1,498,309	6,731,067	985,805	1,182,569	94,208	2,404,059	181,797	4,832,169	71.80	1,898,898	1,502,188	1,377,096	1,570,804
	11 mos.	4,760	51,849,707	18,934,757	75,694,284	9,060,699	13,998,691	918,678	29,122,768	2,301,978	55,153,947	72.90	20,540,337	17,128,217	16,726,394	8,392,811
Ft. Worth & Rio Grande	Nov.	235	123,662	30,344	168,060	47,974	24,345	3,032	62,107	5,770	143,204	85.21	21,856	21,232	14,394	—100,829
	11 mos.	235	1,041,718	438,607	1,618,889	418,860	282,110	34,210	835,802	73,916	1,642,449	101.46	—23,560	—63,758	—190,349	—980,242
St. Louis, San Francisco of Tex.	Nov.	134	137,163	12,215	156,288	58,103	21,654	3,769	59,049	6,829	149,494	95.65	6,794	4,697	—19,699	—83,134
	11 mos.	134	1,523,980	188,118	1,772,281	439,599	318,123	37,365	844,305	75,231	1,714,437	96.73	57,844	35,958	—281,903	—815,085
St. Louis Southwestern	Nov.	968	1,419,075	157,295	1,654,242	148,761	148,724	43,741	398,165	60,387	805,739	48.70	848,503	757,841	725,467	619,508
	11 mos.	968	13,529,603	1,660,580	15,847,634	1,888,870	2,353,161	507,073	4,387,836	627,788	9,829,473	62.00	6,018,161	5,272,016	4,962,344	6,407,499
St. Louis Southwestern of Tex.	Nov.	807	555,238	95,898	683,396	171,747	135,569	18,792	336,528	30,734	691,706	101.20	—8,310	—32,518	—14,919	—122,132
	11 mos.	807	5,446,146	1,160,786	7,079,971	1,773,585	1,779,204	225,425	3,625,783	379,097	7,787,107	110.00	—707,136	—972,201	—805,844	—1,872,475
San Antonio & Aransas Pass	Nov.	738	435,124	67,829	535,128	91,524	108,714	9,450	218,461	22,771	449,781	84.10	85,347	71,207	67,916	23,812
	11 mos.	738	4,529,980	971,689	5,841,391	1,207,389	1,209,154	111,527	2,717,098	263,029	5,501,926	94.10	339,465	188,181	183,784	—129,433
San Antonio, Uvalde & Gulf	Nov.	317	47,392	17,829	71,686	25,776	24,381	2,351	24,740	5,799	84,047	117.20	—12,361	—15,176	—25,850	—48,039
	11 mos.	317	704,345	263,274	1,088,564	177,293	185,701	33,664	408,218	70,938	675,514	80.40	213,050	181,688	62,645	—403,576
Seaboard Air Line	Nov.	3,563	2,604,999	686,761	3,608,176	275,761	664,729	106,347	1,619,344	146,109	2,827,398	78.40	780,778	629,951	434,434	627,784
	11 mos.	3,563	26,754,436	8,811,906	39,143,753	4,455,625	7,344,968	1,320,529	18,918,132	1,640,122	34,029,021	86.90	5,114,732	3,446,663	1,785,617	—3,382,863
Southern Ry.	Nov.	6,971	7,959,317	2,352,738	11,159,256	1,451,598	1,855,856	191,312	4,335,624	330,092	8,238,508	73.80	2,920,748	2,519,757	2,366,608	368,037
	11 mos.	6,971	78,783,684	29,437,278	118,210,892	17,961,210	21,797,408	2,356,399	51,381,087	3,737,291	98,208,829	83.10	20,002,063	15,811,815	12,165,834	14,538,713
Alabama Great Southern	Nov.	313	666,566	146,892	859,561	92,626	180,481	27,798	421,487	30,282	758,936	88.30	100,625	73,905	62,689	30,226
	11 mos.	313	6,321,535	1,868,461	8,713,292	1,222,310	1,793,871	249,179	4,104,023	277,799	7,721,241	88.60	992,051	698,262	717,394	1,969,628
Cin., New Orleans & Tex. Pacific	Nov.	338	1,062,998	259,324	1,393,571	187,147	420,864	37,477	563,804	48,273	1,267,272	90.90	126,299	62,928	101,164	143,248
	11 mos.	338	11,648,572	3,229,405	15,604,032	2,191,813	3,978,366	332,829	6,621,015	459,806	13,700,722	86.70	2,103,310	1,524,786	1,709,953	3,892,689
Georgia Southern & Florida	Nov.	402	262,456	82,311	381,349	77,051	74,805	8,044	193,104	11,881	366,680	96.20	14,669	—2,421	—32,020	—149,070
	11 mos.	402	2,811,631	919,218	4,122,626	881,035	857,628	101,978	2,320,151	141,918	4,313,307	104.60	—190,681	—379,256	—619,718	—270,891
New Orleans & Northeastern	Nov.	207	383,809	73,660	503,498	89,069	98,637	13,808	271,912	20,594	498,165	98.90	5,333	—57,569	—65,267	9,755
	11 mos.	207	4,327,610	974,257	5,831,588	972,210	1,166,582	138,820	2,927,856	195,762	5,448,613	93.40	382,975	—149,786	—300,579	677,299
Northern Alabama	Nov.	110	67,465	11,736	81,446	—24,493	5,199	1,705	42,633	3,215	28,259	34.70	53,187	48,432	33,290	—7,410
	11 mos.	110	641,253	140,201	809,778	161,748	44,618	21,737	404,024	38,936	671,063	82.90	138,715	98,581	—43,402	—84,389
Southern Pacific	Nov.	7,110	9,924,793	3,201,387	14,698,065	2,373,124	2,415,230	184,916	5,259,765	409,799	10,884,650	74.10	3,813,415	2,248,275	2,021,921	2,906,766
	11 mos.	7,110	114,146,513	44,585,806	176,749,357	25,022,751	29,133,558	2,348,968	64,354,648	5,024,960	129,033,053	73.00	47,716,304	35,806,259	33,471,700	23,443,004
Arizona Eastern	Nov.	382	147,721	25,131	193,871	32,451	29,856	3,649	76,685	20,053	163,817	84.60	30,054	5,663	—2,046	107,558
	11 mos.	382	1,915,344	386,817	2,508,850	467,459	439,929	40,188	944,955	233,080	2,157,384	86.00	351,466	101,382	—5,153	351,476
Atlantic S. S. Lines	Nov.	....	948,592	51,185	1,057,650	13,447	290,055	16,465	603,359	23,990	947,316	89.60	110,334	98,370	98,370	104,076
	11 mos.	....	8,606,413	648,713	9,769,554	162,050	2,401,682	188,300	6,121,502	308,339	9,181,873	94.00	587,681	456,804	347,111	—4,825,671
Galveston, Harrisburg & S. Anto.	Nov.	1,380	1,614,496	355,074	2,089,180	435,300	489,299	32,404	792,386	79,628	1,841,108	88.10	248,072	206,755	158,434	—441,851
	11 mos.	1,380	16,749,080	4,867,177	23,123,085	4,465,015	4,787,997	490,412	8,961,740	887,136	19,718,694	85.30	3,404,391	2,933,482	2,032,933	—658,552

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1921—CONTINUED

Name of road.		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rentals.	Net after rentals 1920.
Houston & Texas Central	Nov.	932	$1,132,169	$346,670	$1,571,653	$309,532	$227,725	$21,577	$551,697	$38,109	$1,140,433	72.60	$431,220	$389,377	$294,307	—$66,826
	11 mos.	932	9,478,278	2,876,038	13,067,576	3,219,875	2,014,446	234,917	4,836,670	386,248	10,672,068	81.70	2,395,508	2,001,242	1,452,650	—542,862
Houston, East & West Texas	Nov.	191	216,509	40,415	272,689	62,858	36,878	3,144	109,714	8,460	219,659	80.60	53,030	40,885	17,889	—114,941
	11 mos.	191	2,085,688	521,481	2,745,297	692,254	361,591	38,086	1,117,638	85,601	2,287,631	83.30	457,666	398,264	230,648	—445,312
Louisiana Western	Nov.	207	222,712	82,347	337,941	61,713	77,186	9,317	119,550	17,878	289,683	85.70	48,258	17,118	4,431	84,626
	11 mos.	207	2,779,673	1,036,279	4,055,487	615,021	826,939	121,335	1,277,019	185,169	3,073,952	75.80	981,535	682,465	639,579	663,807
Morgan's L. & Tx. R.R. & S.S.Co.	Nov.	400	645,118	142,736	843,685	183,563	212,331	14,776	328,587	31,125	774,533	91.80	69,152	33,807	10,313	—24,401
	11 mos.	400	5,773,499	1,793,905	8,103,837	1,874,533	1,792,632	187,986	3,462,918	343,686	7,718,176	95.20	385,661	—78,164	—363,431	449,839
Texas & New Orleans	Nov.	507	557,959	136,024	742,434	167,101	193,472	9,541	259,038	27,032	661,167	89.10	81,267	63,111	17,445	—225,245
	11 mos.	478	5,791,757	1,686,870	7,926,492	1,710,936	2,184,678	123,384	3,293,915	287,750	7,655,431	96.60	271,061	61,191	—297,860	—1,253,153
Spokane International	Nov.	165	102,063	14,064	122,196	25,121	11,190	2,817	37,760	6,276	84,046	68.80	38,150	28,791	21,737	16,741
	11 mos.	165	979,334	171,374	1,203,848	264,637	100,167	33,876	403,693	66,421	876,680	72.80	327,168	243,927	172,932	361,349
Spokane, Portland & Seattle	Nov.	549	467,806	113,357	648,493	81,251	65,576	9,254	198,516	19,925	382,535	59.00	265,958	170,942	154,706	115,064
	11 mos.	549	4,969,285	1,688,004	7,295,971	853,939	977,520	98,174	2,460,453	239,261	4,724,412	64.80	2,571,559	1,589,134	1,445,783	963,215
Tennessee Central	Nov.	292	132,882	43,704	189,527	46,308	45,818	5,061	95,685	10,226	203,081	107.20	—13,554	—15,019	—34,876	—91,928
	11 mos.	292	1,479,734	558,600	2,170,237	498,843	460,152	53,783	1,141,164	121,508	2,275,305	104.80	—105,068	—147,721	—352,988	—459,372
Term. R. R. Assn. of St. Louis	Nov.	37	.....	.....	379,030	78,274	35,665	934	124,571	7,695	249,883	65.90	129,147	68,916	199,825	172,167
	11 mos.	37	.....	—8	4,157,718	967,543	395,886	10,854	1,476,307	94,755	2,985,351	71.80	1,172,367	513,045	1,803,058	1,452,905
East St. Louis Connecting	Nov.	3	.....	.....	121,566	11,747	7,261	329	58,802	3,360	81,499	67.00	40,067	37,412	28,387	—16,017
	11 mos.	3	.....	.....	1,481,911	206,750	69,710	3,821	690,014	37,542	1,007,837	68.00	474,074	442,855	323,059	—379,493
St. Louis Mchts. Bridge Term.	Nov.	9	.....	.....	319,261	44,284	24,680	926	156,625	6,638	233,153	73.00	86,108	72,446	90,062	1,987
	11 mos.	9	.....	.....	3,366,672	524,645	263,233	10,767	1,798,930	74,120	2,671,695	79.40	694,977	507,744	684,463	—451,277
St. Louis Transfer Ry	Nov.	6	.....	.....	77,431	11,605	3,828	193	30,781	2,089	48,496	62.60	28,935	28,166	22,074	43,303
	11 mos.	6	.....	.....	1,030,425	108,074	40,427	2,248	388,249	21,842	560,840	54.40	469,585	463,307	408,750	241,416
Texas & Pacific Ry	Nov.	1,952	2,268,936	604,587	3,076,421	393,399	495,721	47,119	1,038,795	163,418	2,160,772	70.20	915,649	804,223	699,385	232,548
	11 mos.	1,950	22,255,049	7,995,172	32,522,156	5,303,282	6,169,227	564,032	12,707,894	1,176,235	26,205,127	80.60	6,317,029	4,973,866	3,905,727	274,675
Toledo, Peoria & Western	Nov.	247	60,682	46,559	118,525	37,574	38,337	2,960	49,562	7,494	135,927	114.70	—17,402	—27,402	—28,825	—33,361
	11 mos.	247	892,368	519,354	1,528,976	352,535	461,442	33,669	858,716	87,509	1,795,135	117.40	—266,159	—376,274	—359,041	—121,753
Toledo, St. Louis & Western	Nov.	454	878,327	25,615	940,838	137,446	150,619	22,569	287,057	13,744	611,308	65.00	329,530	285,530	239,091	338,261
	11 mos.	454	8,015,930	335,227	8,717,980	1,383,375	1,761,924	224,736	3,060,977	177,004	6,607,392	75.80	2,110,588	1,715,570	1,384,145	1,239,718
Trinity & Brazos Valley	Nov.	368	430,091	21,467	464,646	66,430	46,065	2,898	138,423	10,087	263,374	56.70	201,272	194,067	145,143	24,623
	11 mos.	368	2,725,492	218,443	3,040,332	582,477	523,112	32,323	1,159,651	111,007	2,406,790	79.10	633,542	554,645	284,340	—571,043
Ulster & Delaware	Nov.	128	78,053	17,351	118,913	22,469	26,826	2,063	64,999	8,017	125,007	105.10	—6,094	—12,097	—18,360	—40,411
	11 mos.	128	789,023	517,088	1,607,988	219,865	248,016	33,576	853,145	92,227	1,453,883	90.40	154,105	78,447	15,932	—336,293
Union of Pennsylvania	Nov.	45	.....	.....	683,715	45,677	144,553	135	304,252	5,829	500,418	73.20	183,297	173,297	257,196	220,472
	11 mos.	45	.....	.....	8,732,395	696,756	2,273,745	2,470	4,076,727	81,100	7,130,659	81.70	1,601,736	1,502,986	2,209,899	1,080,786
Union Pacific	Nov.	3,660	7,055,270	1,321,712	9,732,843	1,401,929	2,065,956	132,292	2,952,908	330,108	7,043,958	72.40	2,688,885	2,065,327	1,779,167	3,335,779
	11 mos.	3,668	78,547,886	18,143,702	106,414,523	12,032,727	21,086,325	1,573,125	31,420,903	3,584,788	71,698,557	67.40	34,715,966	28,695,500	26,428,795	28,372,797
Oregon Short Line	Nov.	2,366	2,664,556	411,107	3,402,320	554,529	600,148	37,010	1,028,457	118,341	2,391,354	70.30	1,010,966	697,842	626,312	1,015,725
	11 mos.	2,360	25,576,597	5,646,888	33,975,014	5,500,172	6,373,981	474,553	16,947,945	1,375,151	25,289,346	74.40	8,685,668	5,603,638	4,993,303	9,167,877
Oregon, Wash. R.R. & Nav. Co.	Nov.	2,218	1,795,602	420,308	2,534,305	354,563	419,386	54,881	1,108,059	135,615	2,098,349	82.80	435,956	255,116	160,747	—384,517
	11 mos.	2,223	19,163,693	5,774,711	27,331,840	5,733,138	4,632,727	655,557	11,414,299	1,486,364	24,278,568	88.80	3,053,272	1,004,801	—73,531	527,184
St. Joseph & Grand Island	Nov.	258	218,347	23,812	257,337	57,729	43,480	1,676	119,147	12,442	234,474	91.10	22,863	25	—10,200	—11,006
	11 mos.	258	2,590,571	326,418	3,104,965	648,079	535,864	28,663	1,363,283	152,717	2,728,528	87.90	376,437	218,181	132,018	—392,531
Utah	Nov.	102	134,090	733	135,573	23,509	31,778	364	26,034	4,197	86,082	63.49	49,491	35,806	21,329	87,499
	11 mos.	99	1,096,075	6,664	1,115,891	253,602	356,773	4,393	279,464	44,494	929,495	83.29	186,396	85,559	1,928	661,350
Virginian	Nov.	526	1,236,128	71,665	1,405,979	206,367	349,815	9,904	496,382	29,252	1,079,213	76.70	326,766	287,111	293,860	587,381
	11 mos.	526	14,729,002	880,025	16,858,411	2,283,605	3,579,330	113,684	5,101,559	336,340	11,362,721	67.40	5,495,690	4,501,522	4,660,890	4,501,640
Wabash	Nov.	2,472	3,727,428	709,955	4,787,294	615,497	960,562	108,373	2,048,453	147,078	3,903,304	81.50	883,990	702,073	435,922	89,133
	11 mos.	2,472	42,393,255	9,152,315	54,769,861	8,636,157	10,935,705	1,228,918	23,367,166	1,873,409	46,376,621	84.70	8,393,240	6,711,538	3,995,828	—5,553,453
Western Maryland	Nov.	804	1,253,780	73,188	1,390,705	205,025	261,176	29,185	464,216	46,289	1,019,027	73.20	371,678	311,678	290,492	379,330
	11 mos.	800	14,272,354	1,071,998	16,236,338	2,095,966	3,643,474	316,634	5,997,491	557,384	12,817,263	78.90	3,419,075	2,769,075	2,802,820	144,245
Western Pacific	Nov.	1,041	697,632	120,254	904,257	156,517	200,702	27,455	353,189	26,599	782,153	86.50	122,104	12,377	64,958	472,740
	11 mos.	1,014	8,384,724	2,208,670	11,323,407	2,015,481	2,173,593	345,924	4,242,441	419,431	9,419,180	83.20	1,904,227	924,507	1,314,904	3,413,673
Wheeling & Lake Erie	Nov.	511	1,011,821	65,754	1,164,365	124,512	292,801	16,796	448,766	36,276	893,375	76.70	270,990	170,986	180,388	—15,783
	11 mos.	511	11,923,144	873,039	12,832,508	1,810,169	3,182,972	165,401	5,225,118	425,495	10,823,019	78.20	3,009,489	2,067,776	1,806,255	—307,909

Traffic News

The annual meeting and election of officers of the Transportation Club of Louisville, Ky., will be held on February 14.

The Texas Passenger Agents' Association will hold its annual convention at Corpus Christi, Tex, on January 21 and 22.

W. J. Ryan has been appointed assistant traffic manager for the American Tobacco Company at New York, and H. P. Hatfield, assistant traffic manager at Louisville, Ky.

The Traffic Club of Chicago held a memorial luncheon at the Hotel LaSalle on January 12, in honor of Henry C. Barlow, traffic director of the Chicago Chamber of Commerce, who died recently.

The Houston Traffic Club, Houston, Tex., has elected the following officers: president, A. Kimpbell (Houston Drug Company); vice-presidents, Blakely Smith, S. J. Westheimer and F. L. Salisbury (L. & N. R. R.); secretary, F. A. Moulton; treasurer, G. L. Thacker.

The Stark County (Ohio) Traffic Club has elected the following officers: president, A. J. Burns (Bonnot Company); vice-president, J. R. Ellis (Superior Sheet Metal Company); secretary, M. L. Underwood (Buckeye Cereal Company); and treasurer, W. E. Beamer (Penn. R. R.).

Managers of independent oil refineries in the Tulsa (Oklahoma), district met at Tulsa on January 6, to confer on their proposed action looking to the readjustment of tank car rates from Oklahoma to the east. This rate hearing has been scheduled for February 16, at Washington, D. C., before the Interstate Commerce Commission.

The Transportation Club of Decatur, Ill., has elected the following officers: president, T. C. Burwell (A. E. Staley Manufacturing Company); vice-presidents, Porter Milliken (Union Iron Works) and L. F. Boss (Wabash Railway); secretary, S. F. Coay (Leader Iron Works); treasurer, Miss Addie Hambleton, traffic manager of the Mueller Fountain Fixture Company.

The Minneapolis Passenger Traffic Club has been organized at Minneapolis, Minn., and the following officers have been elected: President, W. L. Hathaway, general agent, passenger department, Chicago, Rock Island & Pacific; vice-president, W. E. Gilson; treasurer, A. R Woods, and secretary, J. J. Oslie; members executive committee: B. G. Benson, A. E. Hoadley, H. F. Bostwick, G. H. Feyder, A. W. Saunders and L. P. Green.

At a conference of representatives of several of the intermountain states at Salt Lake City on December 30, initial steps were taken toward the organization of an association representing that territory which will present evidence at the approaching hearings before the Interstate Commerce Commission at Washington on the feasibility of reducing freight rates. H. W. Prickett, of Salt Lake City, was elected president of the association, and T. C. Gill, also of Salt Lake, secretary.

The New York Central reports the arrival in New York City on Monday morning, January 10, of the greatest number of through passengers on limited trains ever recorded at that terminal on a single morning. There were 21 through trains, in all, including The Twentieth Century Limited, four sections; the Fifth Avenue Special, three sections; The Wolverine, two sections; The Detroiter, five sections, and The Beaver, two sections. Between Albany and New York, 143 miles, passengers on these trains were served with breakfast to the number of 1,875.

During a two weeks' campaign on the Chicago, Rock Island & Pacific along 150 miles of its lines in the state of Missouri, demonstrations were held by representatives of that road to promote pure bred stock, better poultry and fruit raising. The Missouri campaign followed like campaigns in eastern Colorado and Oklahoma. In all of these territories the representatives held meetings in which local merchants joined with the farmers, the State Board of Agriculture and the railroad to make the campaign a success. In many cases the representatives visited the farms to hold their demonstrations.

The Great Northern and the Chicago, Milwaukee & St. Paul have declined to accede to the request of the United States Shipping Board that they abrogate their reciprocal traffic arrangements with Japanese steamship lines, which the board had declared detrimental to its efforts to establish freight and passenger service between the North Pacific coast and the Orient. Following a hearing before a committee of the Shipping Board at which all other railroads having contracts with foreign steamship companies practically agreed to abrogate them, the board asked the roads to give it definite advice by January 1 of their intentions, and all of the roads except the St. Paul and the Great Northern had agreed to cancel the contracts by that date.

Hon. Henry C. Wallace, Secretary of Agriculture, in an address before the Traffic Club of Philadelphia on January 9, declared that railroad deficits "must be met by reductions in operating costs rather than by advances in rates." Agriculture, he said, "urgently needs the adjustment of freight rates on farm products to a point at which they bear about the same ratio to the price the farmer received for those products as prevailed before the war." An efficient agriculture and an efficient transportation system, Mr. Wallace declared, are indispensable to the national welfare and are dependent upon one another. The relation between the two industries is so very intimate that neither can afford to acquiesce in a condition which seriously affects the other.

Coal Production

The year 1921 was one of prostration for the coal and coke industries, says the weekly bulletin of the Geological Survey. To match the 407,000,000 tons of soft coal produced, one must go back 10 years, to match the 26,000,000 tons of coke, it is necessary to go back 17 years. To match the completeness of the depression, one must go back to 1893, because the tonnage comparisons ignore the normal increase from year to year. Anthracite stands as an exception. Until late November the hard coal mines continued in active operation and the total output for 1921 fell not far behind the two years just preceding. Production of bituminous coal in the last week of the year, which included the Christmas holiday, is estimated at 5,960,000 net tons.

Railroads Refuse to Cancel Contracts With Japanese Steamship Lines

The United States Shipping Board has asked for the co-operation of the Interstate Commerce Commission in dealing with the situation created by the refusal of the Chicago, Milwaukee & St. Paul and the Great Northern railways to cancel, at the request of the Board, their reciprocal traffic contracts with the Japanese steamship companies, the Osaka Shosen Kaisha and the Nippon Yusen Kaisha. The Seattle Chamber of Commerce and the newspapers of that city have been sending the board numerous protests against the cancellation of the contracts on the ground that contracts between the steamships and the Canadian lines may be substituted and the business diverted to the port of Vancouver. Members of the Shipping Board have been conferring with a committee of the Interstate Commerce Commission on matters in which both bodies are interested and after the Seattle protest had been laid before it the commission voted to meet with representatives of the Shipping Board, the railroads and the port of Seattle to explore the entire question. The meeting is to be held in Washington on January 24. At the hearing last month before members of the Shipping Board, Vice-Presidents R. M. Calkins of the Chicago, Milwaukee & St. Paul and W. P. Kenney of the Great Northern said that if they gave up their contracts with the Japanese lines there would be no assurance that the traffic would go to the Shipping Board boats in service between the Puget Sound and the Orient because it is largely controlled by the Japanese soliciting agencies and that it would very likely be transferred to the Canadian Pacific so far as the rail haul is concerned. Most of the other roads that had foreign steamship contracts readily agreed to give them up and at the request of the board this was confirmed in writing before January 1, but the St. Paul and Great Northern declined.

Commission and Court News

Interstate Commerce Commission

The commission has issued some modifications of the rules and regulations it recently issued prescribing forms of uniform domestic bill of lading and uniform live stock contract.

The commission, on the petition of the American Railway Express Company, has reopened its investigation of the issuance and use of passes, franks and free passenger service.

The commission has suspended until April 25, the operation of schedules published by the Southern Pacific which propose increases in the rates on shingles from points in Oregon and Washington to destinations in Nevada and California.

The commission has suspended from January 11 until May 11 the operation of certain schedules which propose increases and reductions in rates on sugar from New Orleans, La., and points taking same rates to points in Illinois, Iowa, Wisconsin, Minnesota and Missouri.

The commission has suspended until April 23, the operation of certain schedules published by the Missouri Pacific which provide reductions in the rates on bituminous coal, from mines on the Missouri Pacific in Southern Illinois to destinations in Arkansas and Louisiana.

The commission has suspended from January 16 until May 16 the operation of items published by the Bessemer & Lake Erie which provide reduction in the rate on chrome ore from Bessemer, Pa., and other points to Gary, Ind., South Chicago, Ill., Youngstown, Ohio, Farrell and Sharon, Pa.

The commission has suspended until May 3 the operation of certain schedules published by the New York Central, which propose increases in charges for intermediate switching by the N. Y. C. at Toledo and Vulcan, Ohio, from $3.50 to $5.50 a car for loaded cars, and from $2 to $3 a car for empty cars.

The commission has suspended until May 1, the operation of certain schedules published by the Midland Continental, which propose to increase the switching charges from $4 to $5.50 per car on all non-competitive traffic at Jamestown, N. D., between connection of the Northern Pacific and industries on the Midland Continental tracks.

The commission has suspended until May 29 the operation of schedules published by the Louisville & Nashville, which propose reductions in the rates on bituminous coal, carloads, from mines on the Louisville & Nashville in southeastern Kentucky and Tennessee and Virginia to destinations on the Southern in Indiana and Illinois.

The receivers of the Denver & Salt Lake have filed a petition with the commission asking it to issue an order providing for increased divisions to be paid to it by its connectings lines, which, the petition says, are reasonably able to earn a net operating income greatly in excess of 5½ per cent under existing conditions, while the Denver & Salt Lake cannot earn any return at all.

The commission has suspended from January 8, until May 8, 1922, the operation of schedules published by the Illinois Central, which provide reductions of 5 cents per ton on coal from Alabama, Kentucky and Illinois mines to Gulfport, Miss., when for bunkerage, for export, or when for points in Florida and Texas accessible by water, but an increase of 20 cents per ton when handled through tipple for other purposes.

The commission has suspended until May 5 the operation of certain schedules, which propose increases and reductions in rates on prepared roofing, asphalt shingles, building and roofing paper, and related articles from Chicago, East St. Louis, Marseilles, Peoria, St. Louis and points taking same rates to Missouri river points, St. Paul and Duluth, Minn., and to interior jobbing points in Minnesota, the Dakotas, Nebraska, Kansas, Missouri and Colorado.

Foreign Railway News

Electrification in the Philippines

The Manila Railroad contemplates electrification by means of power from the Agno River in Central Luzon, which is believed to possess a potential capacity of from 12,000 to 15,000 h.p., according to the Times (London) Trade Supplement.

Australian Railway in Market for Signals

The Victorian Government Railways, Australia, are in the market for a considerable quantity of power signaling apparatus, including track and line relays, electric signal mechanisms, electro-mechanical interlocking apparatus and 50 miles of insulated copper wire, according to the Times (London) Trade Supplement. Bids for some of this material will be closed on February 15, for others on February 22 and for the remainder on March 1.

Amalgamation of the L. & N. W. and the L. & Y.

The Amalgamation Tribunal, the body set up under the English Railways Act to oversee the mergers of the companies into four territorial groups, has according to the Railway Gazette (London), approved the plans for the consolidation of the Lancashire & Yorkshire with the London & North Western. The amalgamation will take effect on January 1, 1922. Effective on that date the consolidated carriers will operate under a plan of organization embodying a number of changes from previous practice. Details of this plan will appear in these pages at a later date.

Bids for Electrification of Brazilian Railway

The long-expected notice for sealed bids for the electrification of the Central of Brazil was recently announced, according to Assistant Trade Commissioner Embry at Rio de Janeiro. The notice calls for proposals on the electrification of stretches of the line, the supplying of traction and transport material, the construction of substations and various other improvements. The proposals will be received on March 30, 1922, at 1 p. m. A bond of 200 contos ($216,000) is exacted to guarantee the signature of the contract. After that day and following a judgment of the fitness of the competitors, a day will be set for the opening of the proposals, following which a selection will be made.

Only those competitors will be considered as fit who can prove in addition to sufficient financial capacity, that they have furnished and installed other large and complete equipment for electric traction including installations for large railway yards. In order to guarantee the execution of the contract, the bond will be raised to 500 contos of reis ($540,000).

The work relating to the suburbs of Rio de Janeiro is to be concluded within a period of two years and the other works within a period of three years, both counting from the date of registry and approval by the Tribunal de Contas.

There will be three or four substations. Thirty locomotives will be furnished, 10 for freight and 20 for passenger service. For the suburban service, 66 electric cars (carros motores) will be acquired, composed of 60 first-class cars and 6 second class.

Railway Excursions in Great Britain

LONDON.

With the handing back of the English railways to private ownership on August 20, last, a decided and most welcome advance has been made in the facilities provided by the various companies for the traveling public by the reintroduction of day excursions at the rate of a single fare for the round-trip and cheap period excursions at the rate of a single fare and a third for the round-trip. The general public has shown great appreciation of the facilities offered by the railways, and this appreciation is further greatly increased by the frank recognition that the restoration of all pre-war conditions at the present time is

not possible. Owing to the increased cost of labor and materials, ordinary fares and freight rates cannot be brought down to the pre-war level.

Evidence of the approaching return to pre-war conditions is shown by the manner in which the railway companies are doing all in their power to attract business to their lines by the inauguration of day and half-day excursions, special excursions to country fairs, football matches, industrial shows, and during the month of August special cheap tickets were issued from the outlying stations to London in order to give the public an opportunity of visiting the bargain sales held in London during that month. This was the first time this latter privilege had ever been offered and the railways consider that it was a very successful venture. Daily excursions are also run from London to seaside vacation resorts such as Southend-on-Sea, about 35 miles from London, at a fare of 4 shillings (approximately 97 cents at the normal rate of exchange) for the round-trip; Brighton, a distance of 50 miles, at the rate of 7 shillings 6 pence (about $1.82) for the round-trip; to Margate, a distance of 74 miles, at the rate of 11 shillings (about $2.70) for the round-trip; and to Bournemouth, a distance of 107 miles from London, at the rate of 15 shillings 9 pence ($3.83). Daily excursions are also run to most of the large industrial centers throughout the different lines, and daily excursions are run from the principal stations to London and from various points on the various systems to neighboring towns. These daily excursion tickets are good only on specified trains both on the outward and homeward journeys at the rate of a single fare for the round-trip.

Cheap week-end tickets were also introduced on the first week-end after the "decontrol" of the railways to all the principal vacation resorts and industrial centers throughout the country at the rate of a single fare and a third for the round-trip, with a minimum of 10 shillings ($2.43 at the normal rate of exchange) first class and 5 shillings ($1.21) third class. These tickets are available by any train on the outward journey on the Saturday and for return by any train on the Sunday after 6 p. m. up to and including any time on Monday.

In addition to these arrangements, 8-day or 15-day third class excursions have been inaugurated. These excursion trains generally leave on Friday, and the tickets issued by these trains are available for return on the Friday following date of issue or on the Friday two weeks following date of issue. The ticket rates for these excursions like the week-end tickets, are based on a single fare and a third for the round-trip.

Daily and period excursions to the Continent have also been run.

The Great Eastern railway has inaugurated a special railway and hotel accommodation excursion to Harwich from London, a distance of about 71 miles, the fare being inclusive of rail fare and dinner and tea on day of arrival, breakfast, luncheon, tea and dinner on following day, breakfast on third day, and attendance and room for the whole time. The ordinary fare for this round-trip from London is 35 shillings (or $8.50 at the normal rate of exchange), first class, whereas the round-trip first class excursion fare inclusive of hotel accommodations and meals is 59 shillings (about $14.35).

The ordinary third class round-trip fare is 20 shillings 10 pence ($5) and the excursion fare inclusive of accommodation and meals is 42 shillings ($10.20).

The Great Western has inaugurated special day and half day combined rail and river trips from London and various suburban stations and has also organized a circular tour on the River Thames from Kingston to Oxford, a distance of 91 miles.

Further daily excursions have been inaugurated by various tourist companies on all railways throughout Great Britain, and in connection with these excursions the tourist companies are compelled to guarantee 300 passengers for each excursion.

It is stated by the railway companies that the re-introduction of this excursion traffic has met with great success. The companies generally consider these excursions as profitable, although it is too soon to estimate the actual increase due to their introduction. The advertising of excursion facilities is done by means of posters and handbills distributed throughout the various railway stations and advertisements inserted in all the principal local newspapers and in the London daily papers.

Special excursion departments have been organized on nearly all railways under the direction of the superintendents of the line, which take charge of all matters appertaining to excursion traffic.

Equipment and Supplies

Freight Cars

The BUFFALO, ROCHESTER & PITTSBURGH is inquiring for from 20 to 30 caboose cars with steel underframes.

The KIMBERLY-CLARK COMPANY, 51 Chambers street, New York City, is inquiring for 6 flat cars.

THE JOHN MORRELL COMPANY, Ottumwa, Iowa, has awarded the contract for 100 refrigerator cars to the American Car & Foundry Company.

The BENGAL & NORTH WESTERN (India), reported in the *Railway Age* of December 31 as inquiring for 25 cars has ordered 25 logging cars from Cravens, Ltd., England.

The ASSAM BENGAL (India), reported in the *Railway Age* of December 31 as inquiring for 100 cars, has ordered 100 open top cars from the Birmingham Railway Carriage & Wagon Company, Ltd., England.

The ILLINOIS CENTRAL, reported in the *Railway Age* of November 19, as inquiring for 2,500 gondola cars has placed orders for 2,000 gondola cars as follows: Haskell & Barker Car Company, 700; Western Steel Car Company, 400 and Standard Steel Car Company 400, all these cars to have 8 drop doors, and American Car & Foundry, 500 cars to have 12 drop doors.

THE UNION PACIFIC has awarded contracts for 4,500 cars as follows: 1,000 all-steel automobile cars to the Pullman Company; 1,000 steel frame automobile cars to the General American Car Company, and 500 of the same type to the Standard Steel Car Company; 1,000 box cars each to the Mount Vernon Car & Manufacturing Co., and the American Car & Foundry Company.

Passenger Cars

The PENNSYLVANIA RAILROAD will in the near future place orders for cars for passenger service to include 20 all steel dining cars.

Iron and Steel

THE LOUISVILLE & NASHVILLE is inquiring for 50,000 tons of rails.

THE KANSAS CITY SOUTHERN has awarded a contract for 6,000 tons of rails to the Illinois Steel Company.

THE LOUISVILLE & NASHVILLE has ordered 50,000 tons of rail from the Tennessee Coal, Iron & Railroad Company.

THE GOVERNMENT RAILWAYS OF JAPAN have ordered through Mitsui & Co., New York, 13,000 tons of 75-lb. and 60-lb. rail, from the United States Steel Products Company.

Machinery and Tools

THE SEABOARD AIR LINE has ordered a gap lathe from Manning, Maxwell & Moore; a vertical turret lathe from the Bullard Machine Tool Company; a horizontal turret lathe from Warner & Swasey; a wheel press, car wheel borer, engine lathe, 10-ton crane and a steam hammer from the Niles-Bement-Pond Company.

WILLIAM S. WOLLNER, general safety agent of the Northwestern Pacific, has been chosen secretary-treasurer of the San Francisco Engineering Council.

THE FREIGHT REVISION BUREAU of the New York Central at New York city has been transferred to and consolidated with the Freight Revision Bureau at Cleveland, Ohio. All waybill and waybill correction forms and merchandise waybilling instructions are under the jurisdiction of this office. The manager is W. E. Munger.

Supply Trade News

Walter Hasendahl, 1213 Fuller avenue, Los Angeles, Cal., has been appointed representative at Los Angeles of the Orton & Steinbrenner Co., Chicago.

Carl H. Peterson, has been appointed secretary, treasurer and general manager of the **Maher Engineering Company,** Peoples Trust & Savings Bank building, Chicago.

J. A. Connelly, manager of the Tampico, Mexico, office of the Petroleum Iron Works Company, Sharon, Pa., has been appointed sales manager with headquarters at Sharon.

S. F. Bowser, founder and president of **S. F. Bowser & Co.,** Fort Wayne, Ind., has retired from the presidency of the company and will be succeeded by **S. B. Bechtel,** general manager.

The Pilliod Company, manufacturer of the Baker locomotive valve gear, has opened a western office at 750 Railway Exchange building, Chicago, in charge of **Burton Mudge,** vice-president.

O. I. Eberhardt, Board of Trade building, Scranton, Pa., has been appointed a special representative of the Roller-Smith Company, New York City. His territory includes several counties in the northeastern part of Pennsylvania.

Albert J. Leonard has been appointed eastern sales representative of the Handlan-Buck Manufacturing Company, St. Louis, Mo. Mr. Leonard's headquarters are at the eastern office of the company, 52 Vanderbilt avenue, New York City.

The firm of **Black-Matthews Company, Inc.,** 25 Church street, New York City, has been organized by Edward J. Matthews and J. Nelson Black to transact business in iron and steel products, together with machinery and railway equipment.

The Automatic Railway Gate Company, Milwaukee, Wis., has been incorporated with a capital stock of $5,000, to manufacture safety devices for railroad crossings. The incorporators are **Frank P. Mansfield,** 426 Thirty-first street and **Ottmar Kloetzner, Jr.**

Howard J. Charles, formerly with the purchasing and engineering department of the Union Pacific, at New York, who entered the service of the **Elvin Mechanical Stoker Company,** in June, 1921, has been appointed assistant treasurer of the latter company, with office at 50 Church street, New York City.

Robert C. Weller, formerly industrial agent of the New York Central Lines West, and more recently general sales manager of the Lakewood Engineering Company, Cleveland, Ohio, resigned on January 1. He has been elected president of the Marsh-Capron Company, Chicago, manufacturers of rail-track concrete mixers.

The **Ohio Structural Steel Company** has established a plant at Newton Falls, Ohio. **M. H. Stauffer,** formerly of the Niles Forge & Manufacturing Company, Niles, Ohio, has been appointed president and general manager and **J. S. Mitchell,** formerly with the Kansas City Structural Steel Company, Kansas City, Mo., chief engineer.

The **Missouri Tie & Lumber Company** has been organized with offices in the Railway Exchange building, St. Louis, Mo., with **C. O. Deabler,** formerly with the Abeles & Taussig Tie Company and prior to that tie and timber agent of the Southwestern region of the United States Railroad Administration, as president and **James J. Searcy** as secretary-treasurer.

W. H. Graul, department sales manager, and **J. J. Hughes,** manager of the order department of the American Steel Foundries, Chicago, have organized the firm of **Hughes & Graul,** manufacturers representatives, with headquarters in the Peoples Gas Building, Chicago. The company will represent The Ohio Steel Foundry Company, Lima, Ohio, cast steel manufacturers, and The McConway & Torley Company, Pittsburgh, Pa.

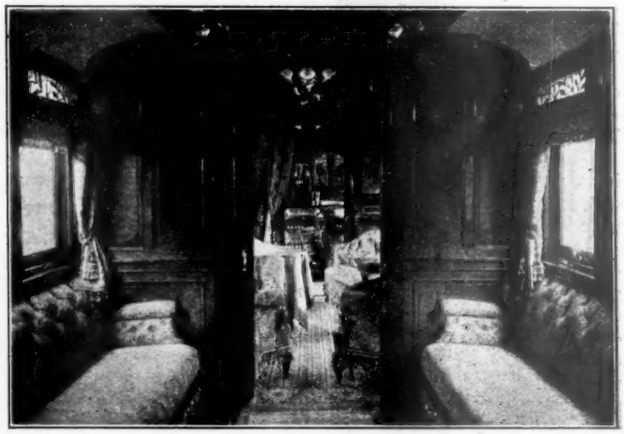
The Hall Switch & Signal Company, Garwood, N. J., has arranged with the General Electric Company, Limited, of London, to manage the sales in foreign countries of the Hall Color-Light Signal and other signal apparatus of Hall manufacture. This arrangement includes France, Belgium, Holland, China, India, Siam, South Africa, New South Wales, Victoria, New Zealand, Western Australia, Argentine and Chili. It is also announced that the Hall products will be sold in Canada by the M. & S. Company, of Montreal.

The Interstate Commerce Commission on January 9, issued an order authorizing the **Pullman Company** to issue 165,000 shares of its capital stock for the purpose of acquiring all the assets of the Haskell & Barker Car Company. The company proposes to increase its authorized capital stock from $120,000,000 to $135,000,000 and to issue 150,000 shares, plus 15,000 shares held in its treasury. The commission expresses the opinion that it was not necessary for the company to apply to it for permission to issue the securities, but says that counsel for the applicant think otherwise and since there is room for doubt concerning the matter, it has decided to assume jurisdiction. Commissioner Eastman dissented, agreeing that it was not necessary for the applicant to come to the commission, but not agreeing that the commission should assume jurisdiction. Because the applicant is in part a common carrier and in part a manufacturing corporation, he said, the transaction in question has nothing to do with the performance of the applicant's functions as a common carrier.

Trade Publications

THAWING OUTFITS.—An eight-page booklet has been issued by the Macleod Company, Cincinnati, Ohio, on its extensive line of kerosene oil burning torches for use in thawing out switches, turntables, ash hoists, cars and other equipment susceptible to freezing during cold weather. Each of the several types of torches mentioned is described fully, with illustrations.

CRAWLING TRACTOR CRANE.—The Industrial Works, Bay City, Mich., has issued an eight-page booklet illustrating and describing the construction and application of the "Industrial" crawling tractor cranes. In addition to describing its line of cranes, some space is given to the history of the company as a manufacturer of industrial cranes, and particular attention is given to showing the advantages afforded by power operated cranes in railway and other industrial service.



Interior of Private Car Built in Formosa Under the Direction of Chief Mechanical Engineer, Government Lines

Railway Construction

CHICAGO, MILWAUKEE & GARY.—This company, which was noted in the *Railway Age* of December 24 (page 1286), as having applied to the Interstate Commerce Commission for authority to construct an extension between Aurora, Ill., and Joliet, a distance of approximately 29 miles, where the company now operates over the tracks of the Elgin, Joliet & Eastern, has received permission to build this line. The entire cost of this work is estimated at $2,700,000.

CHICAGO, MILWAUKEE & GARY.—The Interstate Commerce Commission has issued a certificate authorizing the construction of a line from a point 3.4 miles north of this company's terminals at Aurora, Ill., to a point 3.33 miles east of its terminals at Joliet, Ill., a distance of 29.2 miles.

CHICAGO UNION STATION.—A contract has been awarded to the Lamson Company, Boston, Mass., for the conveyors, chutes, and other mechanical handling equipment to be installed in the $4,000,000 railway mail terminal now being constructed as a part of the Chicago Union Station project.

INTERMOUNTAIN COAL & LUMBER CO.—This company contemplates the construction of a railroad, to extend from near Poorfork, Ky., on the Cumberland Valley division of the Louisville & Nashville, into the Grassy and Bad creek territory, a distance of approximately 12 miles.

INTERSTATE.—This company has awarded a contract to the McClintic-Marshall Company, Pittsburgh, Pa., for the fabrication and erection of 15 deck plate girder bridges for its Guest river etxension and seven deck plate girder and four half through girder bridges for replacing those in its main line between Appalachia, Va., and Norton.

MINERETS & WESTERN.—This company is receiving bids for the construction of a 35.5 mile standard-gage railroad extending from Fresno, Cal., into timber lands. This work is to include the grading, filling, excavating, trestle construction, masonry, etc. In addition the Sugar Pine Lumber Company will construct a 19.5 mile extension from the new terminus of the Minerets & Western into its timber property. The construction work of the entire 55-mile line is estimated to cost $2,500,000.

MISSOURI, KANSAS & TEXAS.—This company, which was noted in the *Railway Age* of December 31 (page 1332), as contemplating extensive construction work in connection with a new freight terminal, including buildings, a yard and connections at Denison, Tex., has now prepared definite plans for the project. The work involves the acquiring of 400 acres of land; the laying of 57 miles of track; the construction of culverts aggregating 6,000 cu. yd. of concrete; 800,000 cu. yd. of grading; a 22-stall roundhouse and shop; a power house, a store house and other locomotive and car facilities, the entire cost of which is estimated at $3,000,000. The necessary land has been purchased and a contract for the grading and the culverts has been awarded to C. R. Cummins Company, Cleveland, Ohio. It is expected that bids for the buildings and structures will not be called for before spring.

MISSOURI PACIFIC.—This company will receive bids until January 16 for the construction of a station at Nashville, Ark., estimated to cost $12,000.

MOBILE & OHIO.—This company is now constructing coal and cinder handling facilities at Jackson, Tenn., estimated to cost $25,000.

UNION PACIFIC.—This company, in conjunction with the city of Denver, Col., will construct a viaduct in that city, extending from Twenty-sixth and Market streets, north across the Union Pacific tracks. The work is estimated to cost approximately $500,000, and will be handled by the city under a contract which has not yet been awarded.

Railway Financial News

CAIRO, TRUMAN & SOUTHERN.—*Authorized to Issue Notes.*—The Interstate Commerce Commission has authorized an issue of $250,000 of five-year promissory notes at 6 per cent, $172,000 to be used to cover floating debts and $78,000 to provide funds for construction and repairs. The authorization is subject to the condition that to the extent that notes are used to cover indebtedness incurred on account of operating expenses or to provide funds for expenditures properly chargeable to operation, they shall be paid from earnings and not made a basis of any future capitalization.

CENTRAL OF NEW JERSEY.—*New Directors.*—The new board of directors consists of William G. Besler, Henry Graves, Jr., Ernest R. Ackerman and Howard W. Maxwell, who were re-elected, and Theodore W. Reath, A. H. Harris, George M. Shriver, Robert E. McCarthy and C. S. W. Packard, who were elected to succeed George F. Baker, former chairman, Robert W. de Forest, E. T. Stotesbury, Daniel Willard and Agnew T. Dice.

CHICAGO & EASTERN ILLINOIS.—*Ends Receivership.*—See article on another page of this issue.

CHICAGO & NORTH WESTERN.—*Company's Strong Position.*—President W. H. Finley is quoted as follows:

> The Chicago & North Western has no floating debt and owes nothing beyond usual current bills. Cash stands at a higher figure than for some years and will be increased by settlement for the guaranty period, against which the company's claim is $16,509,185.
>
> The December business was not as large as November, loadings being 84,507 cars against 126,100 in November, but earnings in both months were seriously affected by shippers' disposition to hold off for lower rates where possible. Reductions are now effective and increased earnings are in prospect.
>
> Improvement in the case of the Chicago & North Western may be predicted to occur about March, in anticipation of the reopening of lake navigation. In the event of a pronounced revival of business the road will be found ready to furnish ample service. The property has been fully maintained. While some shops are runing four days a week, bad order cars average less than 6 per cent.

CHICAGO, MILWAUKEE & ST. PAUL.—*Acquisition of Chicago, Milwaukee & Gary.*—In regard to the proposed acquisition of the Chicago, Milwaukee & Gary, noted in last week's issue of the *Railway Age,* Dow, Jones & Co. quotes H. E. Byram, president of the Chicago, Milwaukee & St. Paul, as follows:

> The acquisition of the Chicago, Milwaukee & Gary coal line operating over approximately 120 miles, forms a natural connection with the St. Paul's main line and the Terre Haute road. It affords easy access to 75 per cent of its territory in the West and Northwest where coal is consumed over a route shorter than via Chicago. Grades are more favorable and will expedite movement. Coal traffic on the road is increasing rapidly. Fifteen-mile saveage is effected by diverting traffic destined to Northwest via Gary line and connecting with St. Paul's main line at Kirkland, Ill. There is also saving of two miles on business destined to La Crosse. The deal also gives the St. Paul direct connection with the New York Central, enabling it in times of congestion and embargoes in Chicago to transfer business for the East and save several days.
>
> The St. Paul guarantees interest on $3,000,000 bonds, guarantee to begin January 1, 1924.

CHICAGO, MILWAUKEE & GARY.—*Acquisition Sought.*—See Chicago, Milwaukee & St. Paul.

CHICAGO, ROCK ISLAND & PACIFIC.—*Statement on Valuation.*—The relation of the tentative valuation of the Chicago, Rock Island & Pacific and the Chicago, Rock Island & Gulf, as issued by the Interstate Commerce Commission in September, to the present capital liabilities of these properties, is made clear in a statement issued to the Rock Island stockholders on January 7. This shows that the commission's valuation exceeds the liabilities as of June 30, 1921, by $9,801,315. An abstract of this statement follows:

After six years' work the tentative valuation of your company's properties was announced by the Interstate Commerce Commission in September at approximately $335,500,000, as of June 30, 1915. This is for carrier property only.

In order to make a comparison of the value announced by the commission with the company's present capitalization, it is necessary to exclude the value of certain leased lines whose capital stock is not entirely owned by this company and to bring the

figures down to date by adding additions and betterments since the date of valuation. So stated, the comparison is as follows:

PHYSICAL PROPERTY AS OF JUNE 30, 1915, AS ANNOUNCED BY COMMISSION

(a) Carrier property (C. R. I. & P., C. R. I. & G., and Morris Terminal)		$335,539,013
(b) Non-carrier property		5,745,895
Total		$341,284,908
From the foregoing should be excluded the values of the following leased lines, which are not controlled through the ownership of entire capital stock:		
Keokuk & Des Moines	$3,464,958	
Peoria & Bureau Valley	1,650,000	
White & Black River	700,000	
		5,814,958
Balance, excluding these lines		$335,469,950
There should also be deducted cash and materials on hand June 30, 1915, as found by the commission		9,022,288
Remainder, representing physical property owned directly or through stock ownership, as of June 30, 1915, as found by commission		$326,447,662
Add: Additions and betterments July 1, 1915, to June 30, 1921		36,374,458
Cash and materials, June 30, 1921		25,455,222
Total, June 30, 1921		$388,277,342

LIABILITIES JUNE 30, 1921, ACCORDING TO COMPANY'S BOOKS

Long term debt	$234,505,515
Loans and bills payable	14,930,000
Preferred stock	54,557,989
Total capital liabilities ahead of common stock	$303,993,504
Common stock outstanding	74,482,523
Total capital liabilities	$378,476,027
Amount by which minimum value as found by commission exceeds total capital liabilities as of June 30, 1921	$9,801,315
Amount of equity represented by common stock (difference between property values of $388,277,342 and total of senior obligations)	84,283,838
Same per share of $74,482,523 of common stock	$113.16

This valuation, officially determined by the United States Government, refutes for all time and for all purposes the suggestion sometimes made by the uninformed, that this company is overcapitalized. We regard the valuation established by the commission as being much less than the actual value of the property, and have filed the protest contemplated by law in the hope that, upon a hearing, the commission will substantially increase its valuation; but, even on the commission's minimum basis, this valuation must be taken as establishing a property value behind our stocks and bonds, much in excess of their par value.

Asks Authority to Issue Bonds and Hold Stock.—The Chicago, Rock Island & Pacific has applied to the Interstate Commerce Commission for authority to issue $1,000,000 of general mortgage gold bonds to reimburse the treasury for expenditures out of income and to be deposited with the trustee of the first and refunding gold mortgage as the basis for an issue of $1,000,000 of bonds, authority for which is also requested, to be held in the treasury as collateral security to be used from time to time for short term notes. The company has also applied to the commission for an order approving the owning and holding by the Rock Island of 35,120.5 shares of the preferred stock and 68,140.5 shares of the common stock of the Chicago & Alton, which ownership results from the litigation growing out of the ownership by the Rock Island of collateral trust bonds of the Toledo, St. Louis & Western.

ERIE.—*Surplus for* 1921.—In refutation of reports concerning reorganization and receivership resulting from the low quotations of all Erie stocks on January 9, Vice-President G. F. Brownell said that the Erie will be able to show a "comfortable surplus" for 1921, after allowing for fixed charges.

Mr. Brownell explained that no new financing was contemplated by the Erie in 1922, and added that he was at a loss to account for the movement. The common stock closed at 7½, the lowest in more than twenty years.

All of the company's interest charges and rentals, due on January 1, amounting to about $2,000,000, were "promptly paid," Mr. Brownell said, and the $1,500,000 required for fixed charges April 1, as well as the $2,000,000 for July 1, would be handled "without difficulty."

Mr. Brownell explained that the matter of the Erie's $15,000,000, three-year, 7 per cent notes, falling due on April 1, 1922, "was receiving attention." Of this $15,000,000 issue, the War Finance Corporation holds slightly more than $12,000,000, and the balance of approximately $2,500,000 is held by the public.

GAINESVILLE & NORTHWESTERN.—*Loan Authorized.*—The Interstate Commerce Commission has approved this company's application for a loan of $75,000 and has granted authority to issue that amount of first mortgage bonds to be pledged with the Secretary of the Treasury as security.

MISSOURI, KANSAS & TEXAS.—*Plan Operative.*—J. & W. Seligman & Co. and Hallgarten & Co., reorganization managers, announce that the securities called for under the reorganization plan have been deposited in such volume that the plan will be declared operative at once. More than 85 per cent of all the bonds called for deposit have accepted the plan, exclusive of the first mortgage 4s. A substantial majority of the stock has also been deposited, but the figures are incomplete on account of foreign stock in transit.

The reorganization plan was outlined in the *Railway Age*, of November 26, 1921, page 1043.

NORFOLK SOUTHERN.—*Asks Loan from Revolving Fund.*—This company has applied to the Interstate Commerce Commission for a loan of $1,000,000 for 10 years.

OREGON SHORT LINE.—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized an issue of $16,424,000 of consolidated first mortgage 5 per cent gold bonds to be sold at not less than 91, to retire maturing bonds.

RIO GRANDE SOUTHERN.—*Protective Committee.*—As a result of the default by this company in the payment of interest on its first mortgage 4 per cent bonds on January 1, a committee to protect the interests of the holders of those bonds has been formed. Its members are Arthur Coppell, of Maitland, Coppell & Co., chairman; Theodore G. Smith, vice-president, Central Union Trust Company; and F. J. Lisman, of F. J. Lisman & Co.

SEABOARD-BAY LINE.—*Applies for a Loan for Equipment.*—This company has applied to the Interstate Commerce Commission for a loan of $4,679,892 for 15 years to enable it to acquire equipment for sale or lease to the Seaboard Air Line.

Railroad Administration Settlements

The United States Railroad Administration reports the following final settlements, and has paid out to the several roads the following amounts:

Peoria & Pekin Union	$135,000
Union Depot Company, of Columbus, Ohio	20,000
Central of Georgia	1,000,000
Ocean Steamship Company of Savannah	2,275,000
Yazoo & Mississippi Valley	5,075,000
Illinois Central Paid Director General	7,750,000

SHORT LINES

Kentwood, Greensburg & Southwestern	$17,000
San Joaquin & Eastern	10,000
Nez Perce & Idaho	6,000
Waterville Railway	3,000

The payment of these claims on final settlement is largely made up of balance of compensation due, but includes all other disputed items as between the railroad companies and the administration during the 26 months of federal control.

Dividends Declared

Nashville, Chattanooga & St. Louis.—3½ per cent, semi-annually, payable February 1 to holders of record January 21.

Pittsburgh & Lake Erie.—$2.50, semi-annually, payable February 1 to holders of record January 25.

BARNEY OLDFIELD states that never in a road race or on any occasion did he cross a railroad at speed or with his car in direct drive; he has always slowed down and shifted to second before crossing. He slows down to look and listen and crosses in second to eliminate the chance of a stalled motor.—B. R. & P. Circular.

THE TRINITY & BRAZOS VALLEY RAILROAD has asked the Texas Railroad Commission for permission to drill six oil wells upon its right of way in the Mexia field, the first application of its kind that ever came before the Commission. The question involved is whether or not under its charter the railroad company can legally engage in the oil production business, and the public hearing on the question brought forth strong opposition. This opposition came chiefly from Morris Frankel and associates who asserted that they had paid $1,000,000 for a lease of ten acres of land, bordering the right of way of the railroad and that if the road should be permitted to drill for oil it would mean a heavy loss to him and his associates. The Trinity & Brazos Valley is owned jointly by the Colorado & Southern and the Rock Island companies.

Railway Officers

Executive

L. D. Gilbert has been elected president of the Lufkin, Hemphill & Gulf; **Arthur Temple,** first vice-president; **E. C. Durham,** second vice-president, treasurer and general manager; **C. M. McWilliams,** secretary, and **C. A. Jordan,** assistant secretary. This road has recently been acquired by the interests which control the Texas South Eastern and of the newly appointed officers Messrs. Temple, Durham and Jordan also hold positions with the latter company.

Frank G. Nicholson, whose election as vice-president and general manager of the Chicago & Eastern Illinois, with headquarters at Chicago, was announced in the *Railway Age* of January 7 (page 162), was born at Gonzales, Tex., on December 17, 1876, and was educated in the public schools, Austin College and at the University of Texas. He entered railroad service in 1899 as a clerk in the offices of the Missouri, Kansas & Texas. He left in 1904, to become secretary to the general manager of the Chicago, Rock Island & Pacific at Chicago, which position he held until 1905, when he entered the service of the Chicago & Eastern Illinois as secretary to the vice-president and general manager. He was promoted successively to chief clerk to the vice-president and general manager, assistant to the receiver and to general manager, which latter position he was holding at the time of his recent promotion.

Thomas D. Heed, whose election as vice-president of the Chicago & Eastern Illinois, with headquarters at Chicago, was announced in the *Railway Age* of January 7 (page 162), was born on March 19, 1875, at St. Louis, Mo. He entered railroad service in January, 1896, in the general auditor's office of the Missouri, Kansas & Texas, at St. Louis. Since that time he has been successively field paymaster for the construction department of the Standard Oil Company; cashier of the Southwestern Passenger Bureau; chief clerk in treasury department of the St. Louis-San Francisco at St. Louis; and assistant secretary and assistant treasurer of the same company with the same headquarters; from 1903 to 1913, assistant secretary and assistant treasurer of the Chicago & Eastern Illinois, with headquarters at Chicago; and from 1913 to 1915, assistant to the receiver of the same company, with the same headquarters. He left railroad service in 1916, but returned in 1918 as receiver and president of the Chicago & Eastern Illinois to act in that capacity during W. J. Jackson's term as federal manager. Upon the return of the railroads to their owners, Mr. Heed became financial assistant to the receiver (Mr. Jackson) which position he was holding at the time of his recent election.

T. D. Heed

Financial, Legal and Accounting

Charles Elsey, whose appointment as vice-president and treasurer of the Western Pacific, with headquarters at San Francisco, Cal., was announced in the *Railway Age* of November 26 (page 1071), was born at Oakland, Cal., on September 18, 1880. He entered railroad service in November, 1907, as assistant treasurer of the Western Pacific, with headquarters at San Francisco. He has been successively treasurer, and secretary and treasurer, which latter position he was holding at the time of his recent promotion.

Oliver G. Browne has been appointed claims attorney of the New York Central, the Cleveland, Cincinnati, Chicago & St. Louis, the Michigan Central and the Toledo & Ohio Central, with headquarters at New York.

Operating

C. G. Stevens has been appointed superintendent of the new consolidated St. Louis division of the Baltimore & Ohio, with headquarters at Washington, Ind.

J. D. Fraser, acting superintendent of the Esquimalt & Nanaimo, with headquarters at Victoria, B. C., has been promoted to superintendent with the same headquarters.

O. F. Clark, superintendent of transportation of the Grand Trunk, with headquarters at Chicago, has been appointed car accountant with the same headquarters. He will be succeeded by **J. A. Clancey,** heretofore trainmaster, with headquarters at Battle Creek, Mich.

H. S. Smith has been appointed trainmaster of the Baltimore & Ohio with headquarters at Washington, Ind. **K. S. Pritchett** has been appointed to a similar position with headquarters at Flora, Ill., and **J. B. Purkhiser** has been appointed trainmaster with headquarters at North Vernon, Ind.

J. C. McPherson, assistant general superintendent of the Pacific Electric, with headquarters at Los Angeles, Cal., has been appointed superintendent of the newly created East Bay Electric division of the Southern Pacific, with headquarters at Oakland, Cal. This new division, which embodies the electric suburban lines in Oakland, Alameda, and Berkeley, was formerly a part of the Western division.

B. H. Hammer has been appointed trainmaster of the Fargo division of the Northern Pacific, with headquarters at Dilworth, Minn., succeeding **J. F. Tracy,** and **O. F. Ohlson** has been appointed trainmaster of the Montana division, with headquarters at Livingston, Mont. **F. L. Birdsall** has been appointed trainmaster, with headquarters at Duluth, Minn., succeeding **T. B. Quinn,** transferred, and **H. J. Councilman** has also been appointed trainmaster with the same headquarters, succeeding **D. E. Nichols,** transferred.

Traffic

R. M. Taliaferro has been appointed commercial agent of the Norfolk & Western with headquarters at Columbia, S. C.

C. J. Nelson has been appointed general agent of the Chicago, Burlington & Quincy with headquarters at Herrin, Ill., effective December 27.

W. P. Withers, general agent of the Gulf & Ship Island, with headquarters at Hattiesburg, Miss., has been transferred to Dallas, Tex., in charge of the newly-created traffic office there.

H. N. Stout, traveling freight agent of the Fort Dodge, Des Moines & Southern, with headquarters at Chicago, has been promoted to general agent, with the same headquarters, succeeding C. E. Carson, resigned.

F. C. Coley, assistant general passenger agent of the New York, New Haven & Hartford and the Central New England, has been promoted to general passenger agent, succeeding **A. B. Smith,** resigned to accept service with another company.

A. M. Thomas has been appointed commercial agent of the Atlantic Coast Line with headquarters at Jacksonville, Fla. **J. L. Moorman** has been appointed to a similar position at Orlando, Fla., and **M. A. Spooner** to a similar position at St. Petersburg, Fla.

Albert Cotsworth, assistant general passenger agent of the Chicago, Burlington & Quincy, with headquarters at Chicago,

has been transferred to Omaha, Neb., succeeding **L. W. Wakely,** general passenger agent, who has been granted a leave of absence due to ill health.

J. C. Willis has been appointed general agent of the Atlanta & West Point, the Atlantic Coast Line, the Georgia, the Louisville & Nashville, the Louisville, Henderson & St. Louis and the Western Railway of Alabama, with headquarters at San Francisco, effective January 1.

B. P. Stedman has been appointed general agent of the Louisiana Railway & Navigation, with headquarters at Alexandria, La. **T. F. Wilder,** commercial agent, with headquarters at Alexandria, has been transferred to New Orleans, La., succeeding John A. Smith, resigned.

William King has been appointed freight claim agent of the New York, New Haven & Hartford, the Central New England, the New England Steamship Company and the New Bedford, Martha's Vineyard & Nantucket Steamboat Company with headquarters at Boston, Mass., effective January 15.

Archibald Gray, general freight agent of the Western Pacific, with headquarters at San Francisco, Cal., has been promoted to assistant to the traffic manager, with the same headquarters. He has been succeeded by **J. D. Mansfield,** manager of the traffic department of the Seattle Chamber of Commerce, Seattle, Wash., who was formerly assistant general freight agent of the road.

The following appointments in the traffic department of the Canadian Pacific are announced, effective January 1: **J. J. Morton,** foreign freight agent, New York; **W. I. Chudleigh,** import freight agent, Chicago; **W. C. Bowles,** assistant freight traffic manager, Montreal; **R. E. Larmour,** general freight agent, Montreal; **S. C. Hurkett,** assistant general freight agent, Montreal; **C. E. Jefferson,** general freight agent, Winnipeg.

Mechanical

J. J. Herlihy, has been appointed master mechanic of the Baltimore & Ohio with headquarters at Washington, Ind.

W. G. McPherson, master mechanic of the Regina division of the Canadian Pacific, with headquarters at Regina, Sask., has been transferred to Moose Jaw, Sask.

C. H. Creager has been appointed road foreman of engines of the Baltimore & Ohio with headquarters at Washington, Ind., and **S. A. Rogers** has been appointed to a similar position with the same headquarters.

Engineering, Maintenance of Way and Signaling

J. Hewes, Jr., has been appointed division engineer of the Baltimore & Ohio with headquarters at Washington, Ind.

W. H. Coverdale, consulting engineer, with headquarters at New York, has been appointed consulting engineer of the Chicago & Eastern Illinois, with the same headquarters.

P. T. Robinson, assistant division engineer of the Southern Pacific, with headquarters at Oakland Pier, Cal., has been promoted to division engineer, with headquarters at Oakland, Cal.

A. N. Reece, division engineer of the Kansas City Southern, with headquarters at Texarkana, Tex., has been promoted to chief engineer, with headquarters at Kansas City, Mo., succeeding **J. M. Weir,** who has resigned to enter the service of the National Boiler Washing Company, Chicago. In connection with this change, Mr. Reece, who was also formerly chief engineer of the Texarkana & Fort Smith, will become the consulting engineer of that road. He will likewise succeed Mr. Weir as chief engineer of the Poteau Valley and of the Arkansas Western.

Purchasing and Stores

C. B. Tobey, assistant general storekeeper of the Lehigh Valley, with headquarters at Packerton, Pa., has been promoted to general storekeeper, with the same headquarters, succeeding **C. C. Huntington,** who has left the service due to ill health.

W. A. Summerhays, whose appointment to the newly created position of lumber and tie agent of the Illinois Central, with headquarters at Chicago, was announced in the *Railway Age* of January 7 (page 162), entered railroad service in June, 1898, as an engineering apprentice of the Illinois Central, and was assigned to track work on the Chicago division. He was promoted to section foreman in 1900, and the following year he was made general foreman on double track and construction work. The latter part of the same year he was promoted to assistant general storekeeper in charge of track materials in the newly created supply department. In 1910, he was promoted to general storekeeper with headquarters at Burnside, Ill., and in 1917, he was promoted to assistant purchasing agent. Mr. Summerhays was in charge of the purchasing department during the period of federal control, at the end of which he was appointed purchasing agent, which position he was holding at the time of his recent appointment.

W. A. Summerhays

Joseph J. Bennett, whose appointment as purchasing agent of the Illinois Central, with headquarters at Chicago, was announced in the *Railway Age* of January 7 (page 162), was born at Centralia, Ill., on July 7, 1885. He entered railroad service in 1902, as an expense clerk in the local freight office of the Illinois Central at Centralia. In 1903 he left to enter the employ of the Centralia Coal Company, for which company he worked in various capacities at the mines, and was later promoted to top superintendent. In July, 1907, he re-entered the service of the Illinois Central as coal inspector at Centralia. He was promoted to traveling coal inspector, Southern lines, with headquarters at Princeton, Ky., in March, 1909, and to fuel agent, with headquarters at Chicago on October 10, 1910. On January 1, 1913, Mr. Bennett was promoted to assistant purchasing agent, with the same headquarters, which position he was holding at the time of his recent promotion.

J. J. Bennett

Obituary

J. R. Walsh, pioneer railroad builder and financier and formerly president of the Southern Indiana, died on January 11 at his home in Chicago.

J. H. Collins, division storekeeper of the Southern Pacific, with headquarters at Los Angeles, Cal., died of pneumonia on December 4, at his home in that city. Mr. Collins had been in the service of the Southern Pacific since 1906.